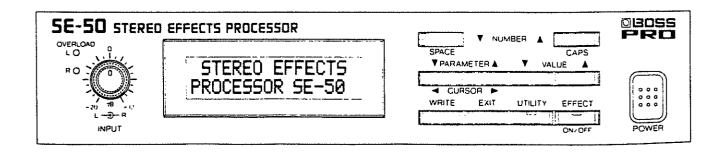
03055

SE-50 STERED EFFECTS

Owner's Manual



Apparatus containing Lithium batteries

ADVARSEL!

Lithiumbatteri. Eksplosionsfare. Udskiftning må kun foretages af en sagkyndig. og som beskrevet i servicemanual.

ADVARSEL!

Lithiumbatteri. Fare for eksplotion. Må bare skiltes av kvalifisert tekniker som beskrevet i servicemanualen.

VARNING!

Lithiumbatteri. Explosionsrisk. Får endast bytas av behong servicetekniker. Se instruktioner i servicemanualen.

VAROITUS!

Lithiumparisto, Rajahdysvaara. Pariston saa vaihtaa ainoastaan alan ammottimies.

For West Germany

Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß der/die/das STEREO EFFECTS PROCESSOR SE-50 (Gerat. Typ. Bezeichnung)

in Übereinstimmung mit den Bestimmungen der Amtsbl. Vfg 1046/1984

(Amisbialityerlugung)

funk-entstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerates angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt

Roland Corporation Osaka/Japan

Name des Herstellers/Imponeurs

RADIO AND TELEVISION INTERFERENCE

This equipment has been visified to comply with the limits for a Class B computing device, pursuant to Subpart 1 of Pair 15 of ECC rules. Operation non-certified or non-vertified or non-vertifi

non-certified or non-vertified squared its likely to result in interference in radio and 19 reception.

The equipment described in this manual generales and uses radio frequency energy. It is not installed and used properly. That is in stirct accordance with this manual development between reception. This equipment has been lessed and found to comply with the limits for a Class 8 computing device in accordance with the specifications in Subpair 1, of Part 15, of PCC Pules. These cures are described to provide reasonable protection against such a intervence in a rassociation in the specification is the state of the second of the user is encouraged to trivial content in the interference will not occur in a particular installation. If this equipment does cause in radio in receivable receiptor, which can be deviced and their input output cables one at a time of the interference by the following ministrusion.

Disconnect other devices and their input output cables one at a time of the interference stops of its caused by effect the other development devices and their input output cables one at a time of the interference stops of its caused by effect the other development devices on the input output cables one at a time of the interference stops of its caused by effect the other development devices of its incomplished in the interference to radio or receivable receiptors above the interference to radio or receivable receiptors.

- Turn the TV or radio antenna until the interference stocs.

 Move the equipment to one side on the other of the TV or radio.

 Move the equipment to one side on the other of the TV or radio.

 Move the equipment at the away from the TV or radio.

 Plug the equipment into an outlet that is on a different oricul than the TV in radio. That is that electrical the reduction of the SV in radio and other states on a different oricular than the TV in radio. es try different circuit breakers or fuses (
- romed by different circuit breakers of ruses (
 Consider instating a roomp television america with coarial cable was in between the silientia and 15. If December in a solution is solutional and its labelity and solution technical for additional suggestions. You may find height the following bubble bittland to the Federal Communications Commission
 Thow to Identify and Resolve Haddo. The Interference Problems
 This bookiet is available from the U.S. Government Printing Office, Washington, D.S., 20402, Stock No. 1004-000 0004-04.

CLASS B

NOTICE

This digital apparatus does not exceed the Class B limits for radio noise emissions set out in the Radio Interference Regulations of the Canadian Department of Communications

CLASSE B

AVIS

Cet appareil numerique ne depasse pas les limites de la classe 8 au niveau des émissions de cruits radioelectriques fixes dans le Réglement des signaux parasites par le ministère canadien des Communications

IMPORTANT: THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE BLUE NEUTRAL BROWN LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED Thank you, and congratulations on your choice of the BOSS SE-50 Stereo Effects Processor. The SE-50 is equipped with a wealth of high-quality effects which are geared perfectly for guitars, basses, keyboards and many other instruments.

Moreover, by using MIDI to connect the unit with external devices, numerous other performance possibilities can be enjoyed. Before starting out, please take the time to read this manual thoroughly. That way, you can feel confident that you have gained a grasp of every feature the unit provides, and thus will be satisfied for years to come.

FEATURES

• 2 - In, 2 - Out Routing

The SE - 50 provides true stereo performance, thanks to its 2 - In, 2 · Out system. Moreover, this means you can obtain stereo output even when using mono instruments, such as a guitar.

Offers a Complete Selection of Algorithms

The SE - 50 employs 28 onboard algorithms. (They determine the way in which effects are combined.) As a result, you have control over the tools needed for creating almost any timbre you want.

Pedal Control Provided

After plugging in a foot - switch, you can shift among programs simply using your foot.

MIDI Control

Since the SE - 50 is equipped with MIDI connectors, an external MIDI device can be used to control it. Moreover, this feature allows you to transfer your SE - 50's data to a MIDI sequencer or another SE - 50.

Mountable in 19 - inch Racks

Using the optionally available RAD - 50 Rack Mount Adaptor, the unit will fit perfectly in a 19 - inch rack.

Copyright © 1990 by BOSS Corporation

All rights reserved. No part of this publication may be reproduced in any form without the written permission of BOSS CORPORATION

How to Use This Manual

This manual is divided into three main sections. Together, they explain the available functions, and how they are used in performance. Also provided is a guide to all the possible settings, and instructions on how to make them. The Table of Contents should be referred to when necessary.

In addition, an alphabetical index is provided at the rear, making it easy for you to look up any items you have trouble understanding while operating the unit.

The contents of each section is as follows:

SECTION I PERFORMANCE

1 Producing Sound

This section explains how to connect the SE - 50 with your other equipment, how to select Effects Programs, and most of the other basic procedures you need to know to operate the unit.

[2] Creating Effects Programs

Using simple procedures, the SE-50 allows you to setup new tonal creations. Programs for these sounds can then be stored in memory. This section explains the process for doing this.

[3] How the Effectors Function

An algorithm consists of a combination of effectors. Further, each effector offers a full range of parameters, which together act in determining the timbre obtained. By making changes in the parameter values, new timbres can be created. This section provides an explanation of each algorithm the SE - 50 offers, and also explains how each of their parameters plays a role in creating the effect that will be obtained.

SECTION II USING MIDI

(I) About MIDI

This section provides a basic introduction to the use of MIDI. If MIDI is employed, you will be able to use an external MIDI device to change and control the Effects Programs on the SE - 50.

(2) MIDI Settings

Here the available MIDI features are explained, along with instructions on how to make settings for them.

3 Getting the Most Out of the SE - 50

This section provides practical examples of the SE - 50 in a MIDI setup.

SECTION III REFERENCE

Here you will find information on what to do when your $SE \times 50$ is not responding as expected, along with other useful information about the unit.

CONTENTS

FEATURES3	8) MULTI DELAY (No.108)37
How To Use This Manual3	9) MULTI TAP DELAY (No.109)39
CONTENTS4	10) STEREO DELAY (No.110)41
IMPORTANT NOTES6	3. Other Algorithms That
PANEL DESCRIPTIONS7	Use Single Effectors43
	11) SPACE CHORUS (No.111)43
SECTION I PERFORMANCE	12) MULTI PITCH SHIFTER (No.112)45
	13) STEREO PITCH SHIFTER (No.113) ····48
1 Producing Sound	14) STEREO FLANGER (No.114)50
1. Making the Connections	15) STEREO PHASER (No.115)52
2. Turning on the Power	4. Algorithms Combining
3. Adjusting the Input Level12	Two or More Effectors54
4. Selection of Program Numbers12	16) VOCODER (No.116)54
1) Selection From the Panel12	17) ROTARY (No.117)56
2) Selection Using a Foot-switch13	18) KEYBOARD MULTI 1 (No.118)58
Setting the Range of Pedal Changes	19) KEYBOARD MULTI 2 (No.119)61
in Program Number ······14	20) RHODES (No.120)64
5. Turning Effects On/Off15	21) GUITAR MULTI (No.121)68
Switching Using the Panel15	22) VOCAL MULTI (No.122)72
Using a Foot - switch ······15	23) STEREO ENHANCER (No.123)75
Setting the Effects Off Mode15	24) 2CH MIXER (No.124)77
2 Changing Effects Program17	5. Algorithms Suitable for
1. First, Some Basics	Use With Mixers80
About Effects Programs17	25) REVERB1 + REVERB2 (No.125)81
1) Composition of Effects Programs17	26) GATE REVERB + REVERB (No.126) ····83
2) Steps Taken in Creating	27) CHORUS + REVERB (No.127)85
an Effects Programs17	28) DELAY + REVERB (No.128)87
2. Copying an Effects Program19	
3. Altering an Effects Program	Section II USING MIDI
4. The Write Procedure20	
5. Altering the Name of	1 ABOUT MIDI92
an Effects Program21	1. The Exchange of MIDI Data92
3 How the Effectors Function23	2. MIDI Messages Recognized
1. The Reverb Algorithms23	by the SE-5093
1) HALL1 (No.101)25	2 MIDI SETTING95
2) HALL2 (No.102)27	 Setting the MIDI Channel
3) ROOM (No.103)28	and OMNI Mode95
4) PLATE (No.104)30	2. Changing Program Numbers96
5) AMBIENCE (No.105)31	3. MIDI CONTROL 98
6) GATE REVERB (No.106)33	4. Using a Foot Controller
7) STEREO REVERB (No.107)35	(FC-100MK II)
2. Delay Algorithms	

5. Receiving and Sending
Data Over MIDI101
1) Making the Connections101
2) Data Transmission (Bulk Dump)102
3) Data Reception (Bulk Load)103
3 Getting the Most From
Your SE-50104
1) Setup Using a Keyboard Controller
and Sound Module104
2) Setup Using a Guitar105
3) Combining a Sequencer106
Section III REFERENCE
Factory Preset Setting108
1. About Factory Preset Settings108
 About Factory Preset Settings108 Restoring the Factory Presets108
 About Factory Preset Settings
About Factory Preset Settings 108 Restoring the Factory Presets 108 (Initializing the Data) TROUBLESHOOTING
About Factory Preset Settings108 Restoring the Factory Presets108 (Initializing the Data) TROUBLESHOOTING110 The List of Algorithm
1. About Factory Preset Settings108 2. Restoring the Factory Presets108 (Initializing the Data) TROUBLESHOOTING110 The List of Algorithm
1. About Factory Preset Settings108 2. Restoring the Factory Presets108 (Initializing the Data) TROUBLESHOOTING
1. About Factory Preset Settings108 2. Restoring the Factory Presets108 (Initializing the Data) TROUBLESHOOTING
1. About Factory Preset Settings108 2. Restoring the Factory Presets108 (Initializing the Data) TROUBLESHOOTING
1. About Factory Preset Settings108 2. Restoring the Factory Presets108 (Initializing the Data) TROUBLESHOOTING
1. About Factory Preset Settings108 2. Restoring the Factory Presets108 (Initializing the Data) TROUBLESHOOTING
1. About Factory Preset Settings108 2. Restoring the Factory Presets108 (Initializing the Data) TROUBLESHOOTING

IMPORTANT NOTES

When using an AC adaptor, be sure that it is one supplied by the manufacturer. Use of any other power adaptor could result in damage, malfunction, or electric shock.

[Power Supply]

- When making any connections with other devices, always turn off the power to all equipment first; this will help prevent damage or malfunction.
- Do not use this unit on the same power circuit with any device that will generate line noise, such as a motor or variable lighting system.
- The power supply required for this unit is shown on its nameplate. Ensure that the line voltage of your installation meets this requirement.
- Avoid damaging the power cord; do not step on it, place heavy objects on it etc.
- When disconnecting the AC adaptor from the outlet, grasp the plug itself; never pull on the cord.
- If the unit is to remain unused for a long period of time, unplug the power cord.

[Placement]

- Do not subject the unit to temperature extremes (eg. direct sunlight in an enclosed vehicle). Avoid using or storing the unit in dusty or humid areas or areas that are subject to high vibration levels.
- Using the unit near power amplifiers (or other equipment containing large transformers) may induce hum.
- This unit may interfere with radio and television reception. Do not use this unit in the vicinity of such receivers.

[Maintenance]

- For everyday cleaning wipe the unit with a soft, dry cloth (or one that has been slightly dampened with water). To remove stubborn dirt, use a mild neutral detergent. Afterwards, he sure to wipe the unit thoroughly with a soft, dry cloth.
- Never use benzene, thinners, alcohol or solvents of any kind, to avoid the risk of discoloration and/or deformation.

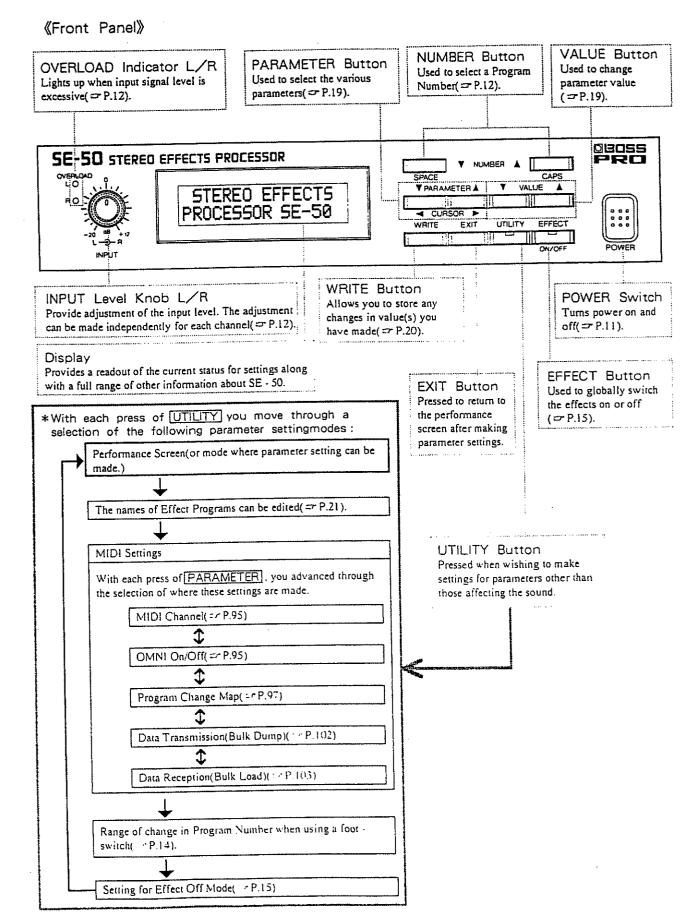
[Memory Backup]

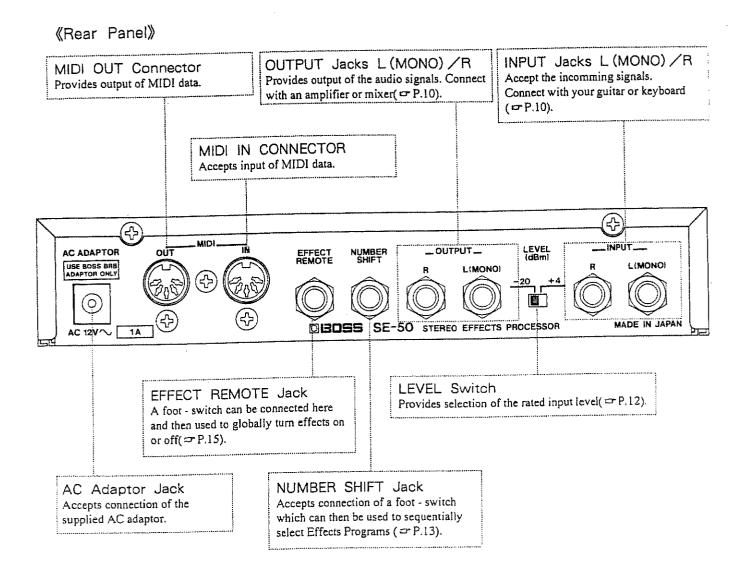
- The unit contains a battery which maintains the contents of memory while the main power is off. The expected life of this battery is 3 years or more. However, to avoid the unexpected loss of memory data, it is strongly recommended that you change the battery every 3 years.
 - Please be aware that the actual life of the battery will depend on the physical environment (especially temperature) in which the unit is used. When it is time to change the battery, consult with qualified service personnel.
- Please be aware that the contents of memory may at times be lost; when the unit is sent for repairs or when by some chance a malfunction has occurred. Important data should be stored in another MIDI device (eg. a sequencer), or written down on paper. During repairs, due care is taken to avoid the loss of data. However, in certain cases, (such as when circuitry related to memory itself is out of order) we regret that it may be impossible to restore the data.

[Additional Precautions]

- Protect the unit from strong impact.
- Do not allow objects or liquids of any kind to penetrate the unit. In the event of such an occurrence, discontinue use immediately. Contact qualified service personnel as soon as possible.
- Never strike or apply strong pressure to the display.
- Before using the unit in a foreign country, consult with qualified service personnel.
- Should a malfunction occur (or if you suspect there is a problem) discontinue use immediately. Contact qualified service personnel as soon as possible.

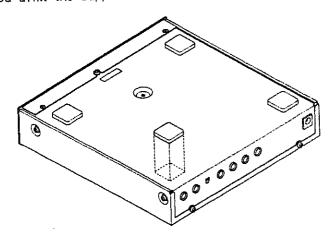
PANEL DESCRIPTIONS





Important

If you are using the unit as is, that is, not going to mount it using the optional RAD-50 Rack Mount Adaptor, make sure you affix the supplied rubber feet to the unit as shown in the illustration below.



SECTION

T

《PERFORMANCE》

1 Producing Sound

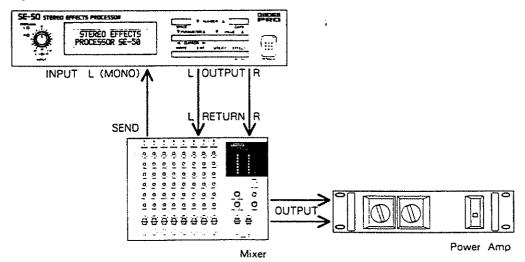
After making any connections with external devices, you are ready to listen to the SE - 50's Effects Programs.

1. Making the Connections

Make the connections with the SE-50 following one of the examples below, depending on the application you have in mind.

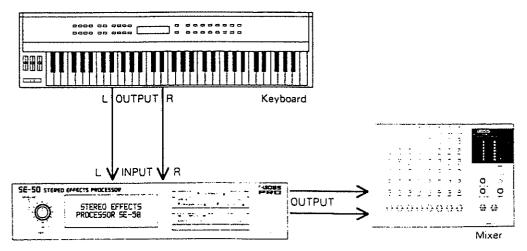
*Always have the volume on your amplifier turned down, and have power to all devices turned off before inserting or pulling out any cords. If you attempt to make connections while power is on, not only could you damage the speakers, but other malfunctions could result.

☐ Setup using a mixer's Send/Return



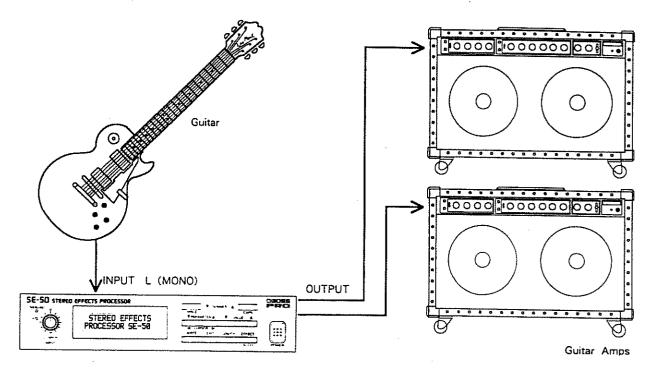
* Check the position of the Level Switch. It should be matched to the level used by the mixer you are using.

Setup using a keyboard



- * Ordinarily, the Level Switch may be set at 20 dBm.
- * For a mono setup, make connections using only the £ (MONO) jack on both input and output ends.

☐ Setup using a guitar or bass



- * Ordinarily, the Level Switch may be set at 20 dBm.
- * For mono output, make connection to only the OUTPUT L (MONO) jack.

2. Turning on the Power

After checking the connections with external units, the power switch on the SE - 50 can be turned on.

* The volume on your amplifier should be raised only after power on every connected unit has been turned on.

With power on, the unit's display will appear as below.

A few seconds later, you will see the following display. This (the performance screen) means you are in the mode used ordinarily for performance.

- * Each time power is turned on, you will find that the Program Number that was selected the last time the unit was on will again be selected.
- * Since the SE 50 is equipped with a circuitry protection feature, it requires a few moments after power is turned on before it can be operated.

3. Adjusting the Input Level

The output level provided by an instrument can vary depending on the instrument. For this reason, you need to adjust the Input Level so it is suited to the particular instrument you are using.

- 1 Turn the Input Level knobs (both left and right) until you have them set so the corresponding Overload indicators light briefly at the moments of the highest level of volume possible from your instrument.
 - * These indicators light up at a level that is 6 dB lower than the clipping level.
 - * Signals entering the SE 50 are at one point converted into digital signals. If the input level is excessive, this digital conversion will be imprecise, which can lead to a reduction in the quality of the resulting sound.
 - *In cases where you have the Level Switch set to " 20dBm", and you notice that the Overload indicator tends to light too frequently, even though you have turned the Input Level knobs all the way down (20dB), you should set the Level Switch to "+4dBm".

4. Selection of Program Numbers

About Program Number

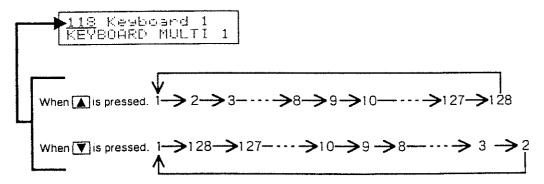
There are 128 locations in the SE - 50 where setting profiles for the effectors are stored. With such settings for each effector, there is a "Program Number" which is assigned to it. These are numbered from 1 through 128. During performance any Program Number you need can be conveniently selected.

1) Selection From the Panel

1 Press the NUMBER buttons.

With each press of the Program Number will increase by one. With each press of the

With each press of he Program Number will increase by one. With each press of the Program Number will decrease by one. In every case, the currently selected Program Number appears in the display.



When either of the NUMBER is held down, you can move consecutively through the numbers.

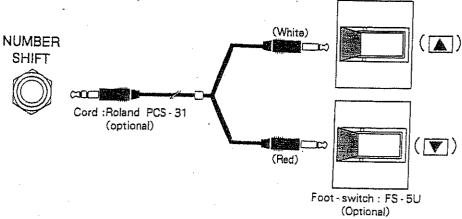
*While in the process of making changes in an Effect Program, you will not be able to change to another Program Number. To be able to select another Program Number, you first need to carry out the Write procedure (**P. 20) for what you are working on.

2) Selection Using a Foot-switch

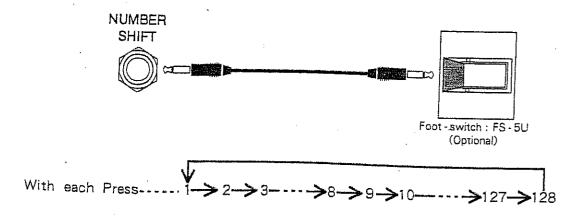
Once you connect the optionally available FS - 5U foot - switch, you then can change Program Numbers with your foot.

- * When using a foot switch, you cannot move consecutively through the Program Numbers even though you keep the pedal depressed.
- * Make sure to always have the power turned off whenever you connect the foot switch.

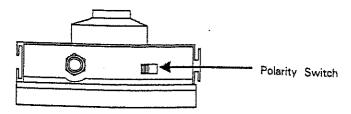
 Otherwise, an unexpected change in Program Numbers could occur.
- O You can obtain padal control over the same functions provided by the NUMBER A V if you connect two foot-switches as shown.



O With only one foot-switch connected, the Program Number will increase by one with each press on the pedal.

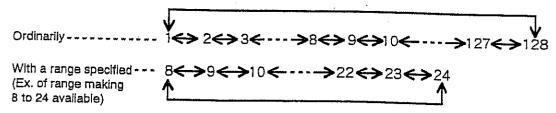


* Set the polarity switch on the FS - 5U to the setting shown below. This way, at the moment you depress the pedal, you obtain a change in the Program Number.

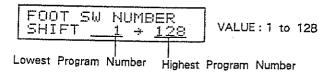


Setting the Range of Pedal Changes in Program Number

When a foot - switch is used to shift Program Numbers, the available numbers ordinarily range from 1 through 128. However, by setting a specific range, you can then shift among Program Numbers within that range only.



1 Press UTILITY enough times to reach the screen shown below.



2 Set the desired range. Select the lowest Program Number using NUMBER . The highest Program Number is selected using VALUE .

- 3 When complete, press EXIT to return to the performance screen.
 - * If you set the Lowest Program Number so it is actually higher than the Highest Program Number, you will obtain changes in a descending order (higher to lower).
 - *The Roland FC-100MK II Foot Controller can also be used to shift Program Numbers. For instructions on use of the FC-100MK II, refer to "4. Using a Foot Controller" (\$\sigma\$ P. 100).

5. Turning Effects On/Off

All effects can be turned on and off. When turned off, all selected effectors will either be bypassed when sound is output; or no sound at all will be output. (A selection between these two options is provided.)

- * Program Numbers can be selected even when effects are turned off.
- * The On/Off status of the effects is not influenced in any way by any other procedures you perform.

☐ Switching Using the Panel

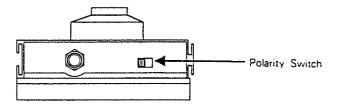
Press EFFECT to turn the effects on and off. When the effects are on, the indicator on the EFFECT button will be lit.

☐ Using a Foot-switch

By connecting an optional FS - 5L foot - switch to the EFFECT REMOTE jack, you will gain pedal control over turning the effects on and off. In this case as well, the indicator on the EFFECT button will be lit when the effects are on.



* Set the polarity switch on the FS - 5L to the setting shown below. The indicator on the foot - switch will also light up when the effects are on.



* When the foot - switch is used to turn effects off, the EFFECT button on the panel will be inactive.

☐ Setting the Effects Off Mode

You have a choice of whether you want only the direct sound to be output, or no sound at all to be output when the effects are turned off.

1 Press UTILITY until you reach the display shown below.

② Using VALUE ▲ ▼, select the mode the unit is to assume when effects are off.

(EFFECT OFF : DIRECT)

EFFECT OFF MODE SELECT : DIRECT EFFECT OFF MODE SELECT : MUTE

(EFFECT OFF : MUTE)

DIRECT: The direct sound alone will be output.

MUTE: No sound at all will be output.

3 When completed, press EXIT to return to the performance screen.

For ordinary use (with an instrument connected) you would normally set this to DIRECT. If you use a setup where you are connected to a mixer's Send/Return jacks however, it should be set to MUTE. Otherwise, there may be a change in the balance of the output from the mixer between times the effects are on and off. This is because even with the SE - 50 effects turned off, the direct sound that is output has been routed through the effects circuitry.

2 Changing Effects Program

The SE - 50 is equipped with a number of effectors. This section guides you through creation of new Effects Programs which combine these effectors. Once created, a program can be easily stored in memory.

1. First, Some Basics About Effects Programs

1) Composition of Effects Programs

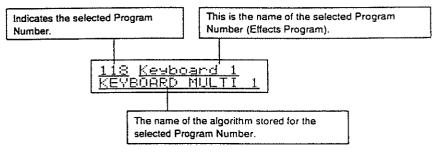
☐ About Program Numbers

Each Effects Program is assigned one of the Program Numbers from 1 through 128. However, numbers 101 to 128 are Presets, and as such, changes made to them cannot be written at these locations. Note, though, that you can save whatever changes you make to an Effects Program that originates as a Preset Number, as long as you write it to another location; to one of the "user" numbers from 1 through 100.

☐ About Algorithms

Every Effects Program is created based on algorithms. An algorithm consists of settings which define a combination where certain effectors are connected with other effectors in particular ways. By choosing an algorithm, you obtain a complete change in the combination of effectors used. Moreover, should there be an effector included in an algorithm which you do not want to be used, it can simply be turned off.

Every time you shift Program Numbers, the algorithm that is used for the selected Effects Program appears in the display.



* At the Preset Numbers (Nos. 101 to 128) you will find a collection of indispensable Effects Programs which use, in order, all 28 algorithms.

2) Steps Taken in Creating an Effects Programs

Either of two methods can be employed in order to create an Effects Program: you can after an existing program, or you can start from scratch

☐ Altering an Existing Effects Program

- 1 Select the Program Number of the Effects Program you wish to alter (P. 12)
- ② Copy the chosen Effects Program to a Program Number which contains a program you do not need (* P. 19).

You do not need to copy it to another location if you have already selected a program that you are going to alter, then write over.

- (3) Make the changes in the Effects Program (\$\sigma\$ P. 19).

 With each effector, there are a number of parameters which control the timbre of the resulting sound.

 To alter an Effects Program you need to individually select these parameters, and provide them with the appropriate values.
 - * The parameters which can be changed will vary depending on the algorithm selected. Even when working with effectors that are used in a particular algorithm, you cannot select the parameters belonging to an effector which is turned off.
- Store the finished Effects Program in memory (=P. 20).
 All changes made in a program's settings are only temporary. They will revert to their original values if you turn power off, or switch to a different Program Number. In order to make your changes permanent, you must perform the Write procedure, and store the program in memory.
- 5 Give the new Effects Program a name (P. 21).

☐ Creating a Completely New Effects Program

- (1) Select a Program Number where an algorithm that most closely matches the type of sound you have in mind is stored (\$\sigma\$ P. 12).
 - The Preset Numbers (Nos. 101 to 128) offer a convenient selection for this purpose, since they represent a collection of common Effects Programs which use, one by one, all 28 algorithms.
- ② Copy the selected Effects Program to a Program Number which contains a program you do not need (\$\sigma\$ P. 19).
- Make the changes in the Effects Program (at P. 19).

 With each effector, there are a number of parameters which control the timbre of the resulting sound.

 To alter an Effects Program you need to individually select these parameters, and provide them with the appropriate values.
 - * The parameters which can be changed will vary depending on the algorithm selected. Even when working with effectors that are used in a particular algorithm, you cannot select the parameters belonging to an effector which is turned off.
- All changes made in a program's settings are only temporary. They will reven to their original values if you turn power off, or switch to a different Program Number. In order to make your changes permanent, you must perform the Write procedure, and store the program in memory.
- (5) Give the new Effects Program a name (50 P. 21).

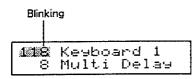
2. Copying an Effects Program

A currently selected Effects Program is copied to another Program Number as follows:

- * Programs 101 through 128 are the Presets. They cannot be copied from another.
- 1 Press WRITE .



② Using the NUMBER ▲▼ buttons, select the destination Program Number.



- * To abort the procedure, press EXIT. You will be returned to the performance screen.
- 3 Press WRITE again, and the copy operation is performed.

When the copy operation has been completed, the Program Number stops blinking and light steadily. You are then returned to the performance screen.



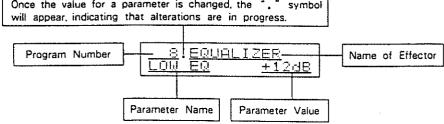
3. Altering an Effects Program

Carry out the steps below to alter the Effects Program at the currently selected Program Number. This procedure is used whenever you wish to make changes in the values for the parameters. For details of each parameter, see P. 23.

① Using PARAMETER ▲ ▼, select the parameter you wish to alter.

The display will appear as below.

Once the value for a parameter is changed, the "."



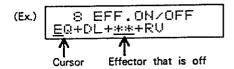
② Using the VALUE ****** , make the changes in the value. A more rapid change in the value can be obtained by holding down the desired up or down button while you then press the opposite button.

Here, you can play your instrument and check how the value changes will affect the sound.

*With algorithms which combine two or more effectors, there are also display pages within which you can turn individual effectors on or off. Within such pages, use the PARAMETER

To move the cursor (underline) until it is positioned under the name of the effector you wish to turn on or off. Then using the VALUE

To switch it on or off. When an effector is turned off, the "**:* "symbols appear in place of its name."



Repeat steps (1) and (2) until your Effects Program is complete.

4. The Write Procedure

Since all changes made in a program's settings are only temporary, they will revert to their original values if you turn power off, or switch to a different Program Number. In order to save your new settings, perform the steps below to Write the program into memory.

- * The Write procedure cannot be performed if the indicator on the UTILITY button is lit. You first need to press EXIT.
- 1 After all parameters have been set as desired, press WRITE.



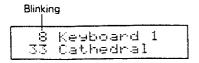
- * Should you wish to cancel the Write procedure, press **EXIT**. You will then be able to resume making alterations in parameter values.
- 2 Press WRITE again, and the write operation is performed.

When the Write operation has been completed, the Program Number stops blinking and lights steadily. You are then returned to the performance screen.



☐ Writing to a Different Program Number

To write your Effects Program to a different Program Number, use the NUMBER to select the destination immediately after step ① above.



The program is stored when you press WRITE.

Rearranging the Order of Effects Program

To rearrange the order in which Effects Programs are stored, repeat the Write procedure to store them at different locations and in the order desired.

- 1 if there is an Effects Program you don't want to lose at a location you wish to use, copy (Write) it to another location.
- 2 Copy the Effects Program you are moving into its new location.

Repeat steps 1 and 2 until you have programs in the order you wish.

Error Message

Should you attempt to write a program into a Preset Number (101 to 128) the following error message will appear in the display:

Here, press **EXIT** and you are returned to the performance screen. Then you can execute Write again, this time using a User Number (1 to 100) as the destination.

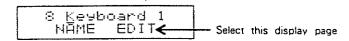
5. Altering the Name of an Effects Program

At each Program Number, a name of up to 12 characters can be assigned. It is best to make a practice of changing the name of an Effects Program after its settings have been altered. This will eliminate the confusion of having two Programs with the same name.

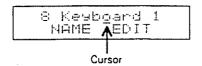
- * No changes can be made in the names of the Preset Numbers (101 to 128).
- ① Using the NUMBER ▲▼, select the Program Number where you are going to alter the name.

② Press UTILITY until you have the NAME EDIT page, shown below.

The indicator on the button will light.



③ Using the CURSOR → (PARAMETER →)move the cursor until it is positioned under the letter you wish to change. Select the new letter using the VALUE → ▼.



When complete, press EXIT to return the performance screen.

These are the characters which are available:

ABCDEFGHIJKLMNOPQRSTUVWXYZ abcdefghijk!mnopqrstuvwxyz {||} \rightarrow [¥] -:;<=>?!" #\$%&' () * +, -. /0123456789

- *You can toggle between capital letters and small letters by pressing CAPS (NUMBER A).
- * To insert a space, press SPACE (NUMBER V).

3 How the Effectors Function

On the SE - 50, sound effects are designed by supplying values for the parameters that go with each effector. This section explains the effect provided by each effector, as well as how the individual parameters work.

* Whenever the term "direct sound" is used, it refers to the sound as it was when entering the effector. "Effected sound" refers to the sound after it has been modified by the effectors.

1. The Reverb Algorithms

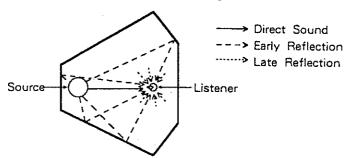
Reverberation is produced as the result of a combination of numerous reflected sounds. For example, if you clap your hands inside a large building such as a church, you will hear the sound while it gradually fades away. Reverberation refers to sound which lingers on for a while in this way.

A number of factors act together in determining the character of a particular reverberation. These include the size (hall, room, etc.) and shape of the space in which it is produced, as well as the type of material making up the reflective surfaces (walls, etc.). The SE - 50 is equipped with the ability to digitally simulate all these factors.

The following provides further details about reverberation.

☐ Types of Reflected Sounds

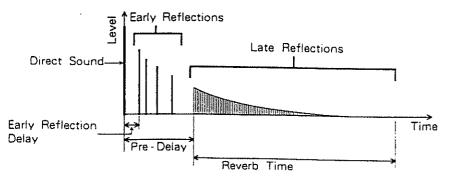
In analyzing everyday sounds we find that they can be divided into three portions: direct sound, early reflections, and late reflections. The direct sound is the sound which travels in a straight line from the source to reach the listener. Early reflections are the sounds which have been reflected back one or more times from walls, etc. Late reflections are diffused sounds which have been reflected numerous times before reaching the listener.



The listener will hear sound in this order: Direct sound, early reflections, then late reflections.

Relationship Between Reflections and Time

Reflected sounds reach the listener in this manner:



The early reflection delay is the amount of time it takes for the early reflections to arrive, counting from the moment the direct sound has been produced. The pre - delay is the amount of time it takes after the direct sound has been produced before the late reflections appear. The reverberation time is the total amount of time it takes before the sound dies out.

Reverberation is thus composed of a complex mixture of all these elements.

☐ Other Factors

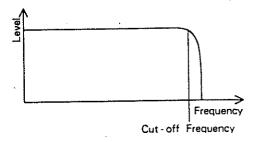
In addition to those factors explained so far, the character of sound is also influenced by the type of material that the reflecting surfaces are made of (Electronic equivalent: HF Damp). The application of a filter to the late reflections also affects the sound.

HF Damp

As a result of differences in the material acting as the reflecting surfaces, there will be changes in the manner in which upper frequencies attenuate. HF Damp is a parameter which provides control over the manner in which this attenuation of the higher frequency content takes place. The lower the value set for HF Damp, the more the upper frequencies will be attenuated.

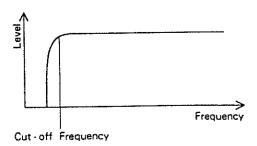
Low-Pass Filter

Cuts the higher frequency content while allowing the lower frequencies to pass through.



High-Pass Filter

Cuts the lower frequency content while allowing the higher frequencies to pass through.



* Depending on the particular algorithms used, the reverb parameters made available for setting changes will vary. For information on the parameters you can use, refer to the explanation for each algorithm.

1) HALL1 (No.101)

101 Hall 1 HALL 1 A Reverb that simulates the natural reverberation of a hall.

☐ REVERB

The Reverb Parameters are as follows.

101.REVERB REV TIME 20.0s Reverb Time(REV TIME):0.1 to 20.0s Adjusts the Reverb Time (→ P. 23).

101.REVERB PRE DELAY 400ms Pre Delay(PRE DELAY):0 to 400ms

Adjusts the Pre Delay (P. 23).

101.REVERB E.R.TYPE 1 ● Early Reflection Type(E.R.TYPE):1 to 4

This parameter provides a choice of four different tone colorations that the early reflections can have (\Rightarrow P. 23).

Type 1: Produces tone color with upper range emphasized.

Type 2: Produces tone color with mid - to - high range emphasized.

Type 3: Produces tone color having a flat response (no emphasis on any particular frequency).

Type 4: Produces tone color with mid - to - low range emphasized.

101.REVERB E.R.DELAY 400ms Early Reflection Delay(E.R.DELAY):0 to 400ms

Adjusts the Early Reflection Delay (P. 23).

101.REVERB E.R.LEVEL 100 ● Early Reflection Level(E.R.LEVEL):0 to 100

Adjusts the volume of the early reflections.

101.REVERB HF DAMF 1.0 HF Damp(HF DAMP):0.1 to 1.0

Adjusts the degree of damping of the upper range reflections (HF Damp: => P. 24).

101.REVERB LOW EQ +12dB ■ Low EQ(LOW EQ): - 12dB to +12dB

Adjusts the tone of the lower range portion of the reverb sound.

101.REVERB HIGH EQ +12dB ◆ High EQ(HIGH EQ): - 12dB to +12dB

Adjusts the tone of the upper range portion of the reverb sound.

101.REVERB LF FILTER 12kHz Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (# P. 24). When set at THRU, the Low-pass Filter is inactive.

* The Low - pass Filter does not affect the early reflections.

101.REVERB HP FILTER 1kHz • High - pass Filter(HP FILTER):THRU, 30Hz to 1kHz

Controls the cut-off frequency of the High-pass Filter (: r. P. 24). When set at THRU, the High-pass Filter is inactive.

* The High - pass Filter does not affect the early reflections.

101.REVERB LEVEL	100	● Reverb Level(LEVEL):0 to 100 Adjusts the volume of the reverberated sound.	
DIRECT		Controls the Direct Sound.	
101.DIRECT LEVEL	100	● Direct Level(LEVEL):0 to 100 Adjusts the volume of the Direct Sound.	
□MASTER		Controls the unit's overall volume.	
101.MASTER LEVEL	100	● Master Level(LEVEL):0 to 100 Adjusts the overall volume(Actual level output by the SE - 50).	

2) HALL2 (No.102)

102 Hall 2 HALL 2 Simulates the reverberation of a hall. It carries a distinctive touch in the middle range, and is ideal for vocals or guitar.

☐ REVERB

The Reverb Parameters are as follows.

102.REVERB REV TIME 20.0s Reverb Time(REV TIME):0.1 to 20.0s

Adjusts the Reverb Time (P. 23).

102.REVERB PRE DELAY 400ms Pre Delay(PRE DELAY):0 to 400ms

Adjusts the Pre Delay (P. 23).

102.REVERB HF DAMP 1.0 HF Damp(HF DAMP):0.1 to 1.0

Adjusts the degree of damping for the upper range reflections (HF Damp: = P. 24).

102.REVERB LOW EQ +12dB ● Low EQ(LOW EQ): - 12dB to +12dB

Adjusts the tone of the lower range portion of the reverb sound.

102.REVERB HIGH EQ +12dB ◆ High EQ(HIGH EQ): - 12dB to +12dB

Adjusts the tone of the upper range portion of the reverb sound.

102.REVERB LP FILTER 12kHz ● Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (= P. 24). When set at THRU, the Low-pass Filter is inactive.

102.REVERB HP FILTER 1kHz High - pass Filter(HP FILTER):THRU, 30Hz to 1kHz

Controls the cut-off frequency of the High-pass Filter (= P. 24). When set at THRU, the High-pass Filter is inactive.

102.REVERB LEVEL 100 ● Reverb Level(LEVEL):0 to 100

Adjusts the volume of the reverberated sound.

☐ DIRECT

Controls the Direct sound.

| 102.DIRECT | LEVEL | 100 Direct Level(LEVEL):0 to 100

Adjusts the volume of the direct sound.

MASTER

Controls the overall volume.

102.MASTER Level 100 Master Level(LEVEL):0 to 100

Adjusts the overall volume (Actual level output by the SE - 50)

3) ROOM (No.103)

103 Room ROOM A Reverb that simulates the reverberation obtained inside a room.

□ REVERB

The following Reverb Parameters are available.

103.REVERB REV TIME 20.0s Reverb Time(REV TIME):0.1 to 20.0s
Adjusts the Reverb Time (← P. 23).

103.REVERB PRE DELAY 400ms ● Pre Delay(PRE DELAY):0 to 400ms

Adjusts the Pre Delay (> P. 23).

103.REVERB E.R.TYPE 1 ● Early Reflection Type(E.R.TYPE):1 to 4

This parameter provides a choice of four different tone colorations that the early reflections can have (= P. 23).

Type 1: Produces tone color with upper range emphasized.

Type 2: Produces tone color with mid - to - high range emphasized.

Type 3: Produces tone color having a flat response (no emphasis on any particular frequency).

Type 4: Produces tone color with mid - to - low range emphasized.

103.REVERB E.R.DELAY 400ms ● Early Reflection Delay(E.R.DELAY):0 to 400ms

Adjusts the Early Reflection Delay (= P. 23).

103.REVERB E.R.LEVEL 100 ● Early Reflection Level(E.R.LEVEL):0 to 100

Adjusts the volume of the early reflections.

103.REVERB HF DAMP 1.0 HF Damp(HF DAMP):0.1 to 1.0

Adjusts the degree of damping for the upper range reflections (HF Damp: > P. 24).

103.REVERB LOW EQ +12dB ● Low EQ(LOW EQ): - 12dB to +12dB

Adjusts the tone of the lower range portion of the reverb sound.

103.REVERB HIGH EQ +12dB ● High EQ(HIGH EQ): - 12dB to +12dB

Adjusts the tone of the upper range portion of the reverb sound.

183, REVERB LP FILTER 12kHz ● Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (== P. 24). When set at THRU, the Low-pass Filter is inactive.

* The Low - pass Filter does not affect the early reflections.

103.REVERB HP FILTER IKHZ High - pass Filter(HP FILTER):THRU, 30Hz to 1kHz

Controls the cut-off frequency of the High-pass Filter (*** P 24). When set at THRU, the High-pass Filter is inactive.

* The High - pass Filter does not affect the early reflections.

103.REVERB LEVEL 100	Reverb Level(LEVEL):0 to 100 Adjusts the volume of the reverberated sound.
DIRECT	Controls the Direct Sound.
103.DIRECT LEVEL 100	Direct Level(LEVEL):0 to 100 Adjusts the volume of the Direct Sound.
MASTER	Controls the unit's overall volume.
103.MASTER LEVEL 100	Master Level(LEVEL):0 to 100 Adjusts the overall volume(Actual level output by the SE - 50).

4) PLATE (No.104)

104 Plate PLATE A Reverb that simulates the sound obtained with a Plate Echo (A unit employing the vibrations of a metal plate to produce reverb). Provides a metallic luster.

☐ REVERB

The following Reverb Parameters are available.

104.REVERB REV TIME 20.0s ● Reverb Time(REV TIME):0.1 to 20.0s

Adjusts the Reverb Time (P. 23).

104.REVERB PRE DELAY 400ms ● Pre Delay(PRE DELAY):0 to 400ms

Adjusts the Pre Delay (P. 23).

104.REVERB HF DAMP 1.0 HF Damp(HF DAMP):0.1 to 1.0

Adjusts the degree of damping for the upper range reflections (HF Damp: = P. 24).

104.REVERB LOW EQ +12dB ■ Low EQ(LOW EQ): - 12dB to +12dB

Adjusts the tone of the lower range portion of the reverb sound.

104.REVERB HIGH EQ +12dB ● High EQ(HIGH EQ): - 12dB to +12dB

Adjusts the tone of the upper range portion of the reverb sound.

104.REVERB LP FILTER 12kHz ● Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (= P. 24). When set at THRU, the Low-pass Filter is inactive.

104.REVERB HP FILTER 1kHz High - pass Filter(HP FILTER):THRU, 30Hz to 1kHz

Controls the cut-off frequency of the High-pass Filter (= P. 24). When set at THRU, the High-pass Filter is inactive.

104.REVERB LEVEL 100 ● Reverb Level(LEVEL):0 to 100

Adjusts the volume of the reverberated sound.

☐ DIRECT

Adjusts the Direct Sound.

104.DIRECT LEVEL 100 Direct Level(LEVEL):0 to 100

Adjusts the volume of the direct sound.

☐ MASTER

Controls the overall volume.

104.MASTER LEVEL 100 Master Level(LEVEL):0 to 100

Adjusts the overall volume (Actual level output by the SE - 50).

5) AMBIENCE (No.105)

105 Ambience AMBIENCE Simulates the sound that is obtained using an "ambience microphone" (A microphone used for recording; it is located away from sources of sound). Similar to Reverb, it provides a sense of spaciousness and depth.

□ AMBIENCE

The Ambience Parameters are as follows.

105.AMBIEMCE MODE

Mode(MODE):1 to 4

Select a Mode to obtain the desired tone color for Ambience. The smaller the Mode number, the more the mid - to - high range will be dampened.

105.AMBIENCE PRE DELAY 400ms

Pre Delay(PRE DELAY):0 to 400ms

Adjusts the Pre Delay (Think of this as identical to Pre Delay for Reverb; = P. 23).

105.AMBIENCE E.R.TYPE

● Early Reflection Type(E.R.TYPE):1 to 4

This parameter provides a choice of four different tone colors that the early reflections can have (= P. 23).

Type 1: Produces tone color with upper range emphasized.

Type 2: Produces tone color with mid - to - high range emphasized.

Type 3: Produces tone color having a flat response (no emphasis on any particular frequency).

Type 4: Produces tone color with mid - to - low range emphasized.

105.AMBIENCE E.R.DELAY 400ms

Early Reflection Delay(E.R.DELAY):0 to 400ms

Adjusts the Early Reflection Delay (P. 23).

105.AMBIENCE E.R.LEVEL 100

● Early Reflection Level(E.R.LEVEL):0 to 100

Adjusts the volume of the early reflections.

105.AMBIENCE LOW EQ +12dB

■ Low EQ(LOW EQ): - 12dB to +12dB

Adjusts the tone of the lower range portion of the ambience sound.

105.AMBIENCE HIGH EQ +12dB

● High EQ(HIGH EQ): - 12dB to +12dB

Adjusts the tone of the upper range portion of the ambience.

105.AMBIENCE LP FILTER 12kHz

● Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

* The Low - pass Filter does not affect the early reflections.

105.AMBIENCE HP FILTER 1kHz

High - pass Filter(HP FILTER):THRU, 30Hz to 1kHz

Controls the cut - off frequency of the High - pass Filter (: r P 24). When set at THRU, the High - pass Filter is inactive.

* The High - pass Filter does not affect the early reflections.

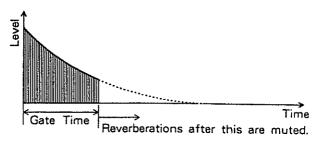
● Ambience Level(LEVEL):0 to 100 105.AMBIENCE LEVEL 100 Adjusts the volume of the ambience sound. □ DIRECT Controls the Direct Sound. ● Direct Level(LEVEL):0 to 100 105.DIRECT LEVEL 100 Adjusts the volume of the Direct Sound. Controls the unit's overall volume. ☐ MASTER ● Master Level(LEVEL):0 to 100 105.MASTER LEVEL 100 Adjusts the overall volume (Actual level output by the SE - 50).

6) GATE REVERB (No.106)

106 Gate Reverb GATE REVERB A Gate Reverb that accepts stereo input. Since the effect supports stereo, the Gate Reverb sounds can be output at the same point in the stereo image as the direct sound.

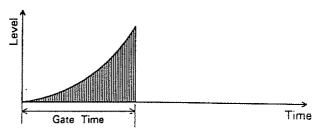
What is Gate Reverb?

A unique sound can be obtained when a reverberating sound is muted partway through. This technique is known as gated reverb.



The effect is most effective when used with percussion sounds, such as a snare drum.

Additionally, the reverb sound can be reversed, producing a reverberation that gradually increases.



This is called a Reverse Gate. It produces extraordinary sounds that are unique to digital processing.

☐ GATE REVERB

The following Gate Reverb Parameters are available.

106.GATE REVERB MODE NORMAL

Mode(MODE):NORMAL, REVERSE, LEFT → RIGHT, RIGHT → LEFT

Select the Mode providing the desired Gate Reverb.

NORMAL: The ordinary Gate Reverb

REVERSE: Reverse Gate

LEFT → RIGHT: The Gate Reverb Sound travels from left to right.

RIGHT → LEFT: Gate Reverb Sound travels from right to left.

* When using Modes "LEFT → RIGHT" or "RIGHT → LEFT", you should input the same signals to both L and R channels.

106.GATE REVERB GATE TIME 400ms

Gate Time(GATE TIME):5 to 400ms

Adjusts the Gate Time.

106.GATE REVERE PRE DELAY 200ms

• Pre Delay(PRE DELAY):0 to 200ms

Adjusts the Pre Delay (= P. 23).

106.GATE REVERS LOW E0 +12dB

■ Low EQ(LOW EQ): - 12dB to +12dB

Adjusts the tone of the lower range portion of the reverb

106.GATE REVERB HIGH EQ +12dB ● High EQ(HIGH EQ): - 12dB to +12dB

Adjusts the tone of the upper range portion of the reverb.

106.GATE REVERB LP FILTER 12kHz ● Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (P. 24). When set at THRU, the Low-pass Filter is inactive.

106.GATE REVERB HP FILTER 1kHz • High - pass Filter(HP FILTER):THRU, 30Hz to 1kHz

Controls the cut-off frequency of the High-pass Filter (\Rightarrow P. 24). When set at THRU, the High-pass Filter is inactive.

106.GATE REVERB LEVEL 100 ● Gate Reverb Level(LEVEL):0 to 100

Adjusts the volume of the Gate Reverb sound.

□ DIRECT

Controls the Direct sound.

106.DIRECT LEVEL 100 ● Direct Level(LEVEL):0 to 100

Adjusts the volume of the direct sound.

☐ MASTER

Controls the overall volume.

106.MASTER LEVEL 100 ■ Master Level(LEVEL):0 to 100

Adjusts the overall volume(Actual level output by the SE - 50).

7) STEREO REVERB (No.107)

107 St.Reverb STEREO REVERB Allows Reverb to be applied separately to each channel, with each having its own position in the sound image. This results in an expansiveness and sense of position that is unobtainable with conventional reverb units.

□ REVERB

The following Reverb Parameters are available. The settings made here are common to both channels.

107.REVERB REV TIME 20.0s ● Reverb Time(REV TIME):0.1 to 20.0s

Adjusts the Reverb Time (P. 23).

107.REVERB PRE DELAY 200ms ● Pre Delay(PRE DELAY):0 to 200ms

Adjusts the Pre Delay (P. 23).

107.REVER8 E.R.TYPE 1 ● Early Reflection Type(E.R.TYPE):1 to 4

This parameter provides a choice from among four different tone colorations that the early reflections can have (P. 23).

107.REVERB E.R.DELAY 200ms ● Early Reflection Delay(E.R.DELAY):0 to 200ms

Adjusts the Early Reflection Delay (= P. 23).

107.REVERB E.R.LEVEL 100 ● Early Reflection Level(E.R.LEVEL):0 to 100

Adjusts the volume of the early reflections.

107.REVERB HF DAMP 1.0 ● HF Damp(HF DAMP):0.1 to 1.0

Adjusts the degree of damping for the upper range reflections (HF Damp: = P. 24).

107.REVERB LOW EQ +12dB ◆ Low EQ (LOW EQ): - 12dB to +12dB

Adjusts the tone of the lower range portion of the reverb sound.

107.REVERB HIGH EQ +12dB ◆ High EQ (HIGH EQ): - 12dB to +12dB

Adjusts the tone of the upper range portion of the reverb sound.

107.REVERB LP FILTER 12kHz ● Low - pass Filter (LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (= P. 24). When set at THRU, the Low-pass Filter is inactive.

* The Low - pass Filter does not affect the early reflections.

107.REVERB HP FILTER 1kHz ● High - pass Filter (HP FILTER):THRU, 30Hz to 1kHz

Controls the cut-off frequency of the High-pass Filter (\Rightarrow P. 24). When set at THRU, the High-pass Filter is inactive.

* The High - pass Filter does not affect the early reflections.

107.REVERB LEVEL 100 • Reverb Level (LEVEL):0 to 100

Adjusts the volume of the reverberated sound.

DIRECT	Controls the Direct sound.
107.DIRECT LEVEL 100	● Direct Level(LEVEL):0 to 100 Adjusts the volume of the direct sound.
□MASTER	Adjusts the overall volume.
107.MASTER LEVEL 100	Master Level(LEVEL):0 to 100 Adjusts the overall volume (Actual level output by the SE - 50)

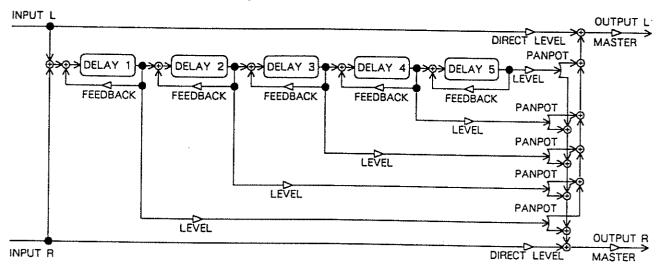
2. Delay Algorithms

SE - 50 provides 3 types of Delay Algorithms. As a result, you now have ready access to a range of effects which formerly would have required you to connect together a number of separate units.

8) MULTI DELAY (No.108)

108 Multi Delay MULTI DELAY This algorithm lines up 5 delay processors in a row.

They are organized as shown below.



DELAY 1/2/3/4/5 The following provide adjustment of each of the Delay parameters.

108.DELAY 1 D.TIME 600ms ● Delay Time 1/2/3/4/5(D.TIME 1/2/3/4/5): 1;0 to 600ms, 2;0 to 500ms, 3;0 to 400ms, 4;0 to 300ms, 5;0 to 200ms Adjusts the Delay Time.

108.DELAY 1 FEEDBACK 100 • Feedback 1/2/3/4/5(FEEDBACK 1/2/3/4/5):0 to 100

Feedback refers to the process of feeding a portion of the delayed sounds back into the delay unit. Here you set the amount that is to be fed back. This affects the number of repetitions occurring in the delay.

108.DELAY 1 |FAN L=100 R= 0 ● Panpot 1/2/3/4/5(PAN 1/2/3/4/5):L=0 to 100, R=0 to 100

Adjusts the sound image (Panpot) for the Delayed Sound.

108.DELAY 1 LEVEL 100 Delay Level 1/2/3/4/5(LEVEL 1/2/3/4/5):0 to 100

Adjusts the volume of delayed sound.

☐ FILTER

Low - pass Filter and High - pass Filter Parameters are provided.

108.DELAY LP FILTER 12kHz ● Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (= P. 24). When set at THRU, the Low-pass Filter is inactive.

108.MASTER LEVEL

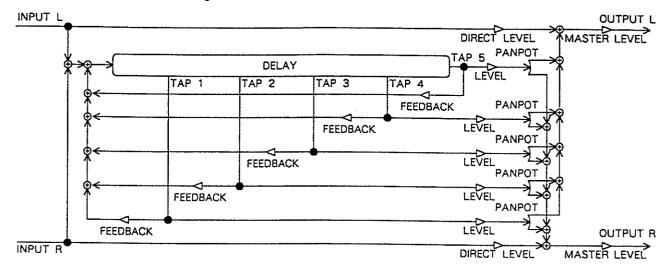
100

108.DELAY HP FILTER 1kHz	● High - pass Filter(HP FILTER):THRU, 30Hz to 1kHz Controls the cut - off frequency of the High - pass Filter (P. 24). When set at THRU, the High - pass Filter is inactive.
□ DIRECT L/R	Controls the Direct sound.
108.DIRECT LEVEL L 100	● Direct Level L/R(LEVEL L/R):0 to 100 Adjusts the volume of the direct sound for each channel.
MASTER	Controls the overall volume.
108 MASTER	● Master Level(LEVEL):0 to 100

Adjusts the overall volume (Actual level output by the SE - 50).

9) MULTI TAP DELAY (No.109)

109 Tap Delay MULTI TAP DELAY This algorithm allows each of the five delays to be set independently. The five delay circuits are organized as shown below.



☐ DELAY TAP 1/2/3/4/5

The following provide adjustment of each of the Delay parameters.

109.DELAY TAP 1 D.TIME 2000ms

● Delay Time 1/2/3/4/5(D.TIME 1/2/3/4/5):0 to 2000ms

Adjusts the Delay Time.

109.DELAY TAP 1 FEEDBACK 100

• Feedback 1/2/3/4/5(FEEDBACK 1/2/3/4/5):0 to 100

Feedback refers to the process of feeding a portion of the delayed sounds back into the delay unit. Here you set the amount that is to be fed back. This affects the number of repetitions occurring in the delay.

109.DELAY TAP 1 PAN L=100 R= 0 ● Panpot 1/2/3/4/5(PAN 1/2/3/4/5):L=0 to 100, R=0 to 100

Adjusts the sound image (Panpot) for the delayed sound.

109.DELAY TAP 1 LEVEL 100 Delay Level 1/2/3/4/5(LEVEL 1/2/3/4/5):0 to 100

Adjusts the volume of delayed sound.

☐ FILTER

Low - pass Filter and High - pass Filter Parameters are provided.

109.DELAY LP FILTER 12kHz ● Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (> P. 24). When set at THRU, the Low-pass Filter is inactive.

109.OELAY HP FILTER 1kHz • High - pass Filter(HP FILTER):THRU, 30Hz to 1kHz

Controls the cut-off frequency of the High-pass Filter (= P. 24). When set at THRU, the High-pass Filter is inactive.

DIRECT	L/R
--------	-----

Controls the Direct sound.

109.DIRECT LEVEL 100 • Direct Level L/R(LEVEL L/R):0 to 100

Adjusts the volume of the direct sound for each channel.

☐ MASTER

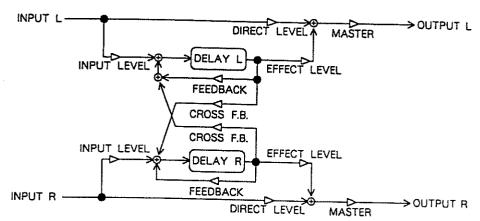
Controls the overall volume.

109.MASTER LEVEL 100 ■ Master Level(LEVEL):0 to 100

Adjusts the overall volume (Actual level output by the SE - 50).

10) STEREO DELAY (No.110)

110 Stereo Delay STEREO DELAY This algorithm allows delay to be set independently for each of the two channels. The delay circuits for L and R channels are organized as shown below.



DELAY L/R

The following provide adjustment of each of the Delay parameters.

110.DELAY L D.TIME 680ms

● Delay Time L/R(D.TIME L/R):0 to 680ms

Adjusts the Delay Time.

110.DELAY L FEEDBACK 100

● Feedback L/R(FEEDBACK L/R):0 to 100

Feedback refers to the process of feeding a portion of the delayed sounds back into the delay unit. Here you set the amount that is to be fed back. This affects the number of repetitions occurring in the delay.

110.DELAY L CROSS F.B. 100

◆ Cross Feedback L/R(CROSS F.B. L/R):0 to 100

This algorithm allows you to feed back a delayed signal to its opposite channel. This setting determines the amount that is to be fed back.

110.DELAY L LP FILTER 16kHz

● Low - pass Filter L/R(LP FILTER L/R):500Hz to 16kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (\Rightarrow P. 24). When set at THRU, the Low-pass Filter is inactive.

110.DELAY L HP FILTER 1kHz

● High - pass Filter L/R(HP FILTER L/R):THRU, 30Hz to 1kHz

Controls the cut - off frequency of the High - pass Filter (= P. 24). When set at THRU, the High - pass Filter is inactive.

110.DELAY L IMPUT LEVEL 100

• Input Level L/R(INPUT LEVEL L/R):0 to 100

Adjusts the level that is input to the delay, for each channel.

110.DELAY L EFFECT LEVEL 100

■ Effect Level L/R(EFFECT LEVEL L/R):0 to 100

Adjusts the volume of delayed sound.

110.DELAY L DIRECT LEVEL 100 ● Direct Level L/R(DIRECT LEVEL L/R):0 to 100

Adjusts volume of direct sound for each channel.

☐ MASTER

Adjusts the overall volume.

110.MASTER LEVEL 100 ● Master Level(LEVEL):0 to 100

Adjusts the overall volume (Actual level output by the SE - 50).

3. Other Algorithms That Use Single Effectors

In addition to Reverb and Delay, the SE - 50 also provides other effectors that are setup to be used alone, such as Chorus or Pitch Shifter.

11) SPACE CHORUS (No.111)

111 Space Chorus SPACE CHORUS By adding, to the direct sound, sound portions which have been shifted minutely in pitch, this effect adds greater fatness and spaciousness to sound.

☐ SPACE CHORUS

The Chorus Parameters are as follows.

111.SPACE CHORUS MODE 3

Mode(MODE):1 to 3

A mode is selected to choose the desired fatness for the Chorus. The higher the number, the fatter the sound becomes.

111.SPACE CHORUS MOD.WAVE TRI

Modulation Wave (MOD.WAVE):TRI, SINE

Here the type of wave for the Chorus modulation is selected. The way the modulation works is altered as a result.

TRI (TRIANGLE: Triangle Wave): Provides a smooth sound, without the modulation being too obvious.

SINE (SINE: Sine Wave)

: Provides a distinctive, pronounced Chorus.

111.SPACE CHORUS PRE DELAY 200ms

Pre Delay(PRE DELAY):0 to 200ms

After the direct sound has started, this is the amount of time it takes before the Chorus effect begins. When a fairly long value is set, you obtain a "doubling" (numerous sources seem to sound at once) effect.

111.SPACE CHORUS RATE 100

Rate(RATE):0 to 100

Adjusts the rate of the modulation for Chorus.

111.SPACE CHORUS DEPTH 100

Depth(DEPTH):0 to 100

Adjusts the modulation depth for Chorus.

111.SPACE CHORUS DIFFUSION 100

Diffusion(DIFFUSION):0 to 100

Adjusts the extent of diffusion the Chorus will have.

* When output is mono, this parameter is not effective.

111.SPACE CHORUS LEVEL 100

Chorus Level(LEVEL):0 to 100

Adjusts the volume of the Chorus sound.

☐ DIRECT

Controls the direct sound.

111.DIRECT LEVEL 100

Direct Level(LEVEL):0 to 100

Adjusts volume of direct sound.

■ MASTER

Adjusts the overall volume.

111.MASTER LEVEL 100 ■ Master Level(LEVEL):0 to 100

Adjusts the overall volume (Actual level output by the SE - 50).

☐ MIDI CONTROL

The MIDI Control parameters are as follows.

* For details on MIDI Control, see "MIDI Control" (☞ P. 98).

111.MIDI CONTROL RECEIVE OFF ●MIDI Control Receive(MIDI CONTROL RECEIVE): OFF, AF TOUCH, P.BEND, #0 to #31, #64 to #95

Provides selection of the type of MIDI data to be received.

111.MIDI CTL ASN CHORUS RATE •MIDI Control Assign(MIDI CTL ASN): CHORUS RATE, CHORUS LEVEL, MASTER LEVEL

Select the parameter you wish to have controlled.

111.MIDI CTL MIN

MIDI Control Minimum(MIDI CTL MIN):

This setting specifies the lowest value that will be valid for control.

* The value must be within the range allowed for the parameter.

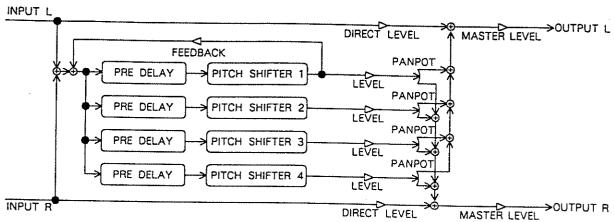
111.MIDI CTL MAX

MIDI Control Maximum(MIDI CTL MAX):

This setting specifies the highest value that will be valid for control.

12) MULTI PITCH SHIFTER (No.112)

112 P.Shifter PITCH SHIFTER This Effector makes it possible to readily shift the pitch of the original sound to any pitch desired within a range spanning 2 octaves in either direction. Additionally, up to four types of pitch variations can be produced and output simultaneously. One of these can also be fed back for further processing.



* Due to the structure, the Pitch - shifted sound may tend to be slightly delayed even if Pre Delay is set to "0 ms".

☐ PITCH SHIFTER 1/2/3/4

The parameters set for Pitch Shifter are as follows.

112.P.SHIFTER 1 MODE 1

● Mode 1/2/3/4(MODE 1/2/3/4):1 to 3

Select a Pitch Shift Mode.

Mode 1: Provides the least amount of delay for the Pitch - shifted sound. Effective when the pitch is being shifted by small amounts. As the amount of pitch change becomes greater, the wavering in the sound increases, and at times the pitch may become erratic.

Mode 2: There is less wavering compared with Mode 1, and less delay in comparison with Mode 3.

Mode 3: There is very little wavering, and it provides a pitch that is relatively precise.

Useful for making wide ranging pitch changes. The shifted sounds will be somewhat delayed.

112.P.SHIFTER 1 FITCH +24

● Pitch 1/2/3/4(PITCH 1/2/3/4): - 24 to +24

Setting for the amount of Pitch Change desired, in semitones.

112.P.SHIFTER 1 FINE +50

● Fine 1/2/3/4(FINE 1/2/3/4): - 50 to +50

Provides precision adjustment of the Pitch Change

- *One unit for "PITCH" is equivalent to 100 units for "FINE".
- * If you assign "FINE" for MIDI Control, the values available for pitch changes will range from ~ 2450 to +2450.

112.P.SHIFTER 1 PRE DELAY 760ms

● Pre Delay 1/2/3/4(PRE DELAY 1/2/3/4):

1:0 to 760ms, 2:0 to 570ms, 3:0 to 380ms, 4:0 to 190ms

After the direct sound has started, this is the amount of time it takes before the pitch - shifted sound is produced. Ordinarily, it should be set at "0 ms".

112.P.SHIFTER 1 PAN L=100 R= 0

● Panpot 1/2/3/4(PAN 1/2/3/4):L=0 to 100, R=0 to 100

Adjusts the sound image for the Pitch - shifted sound (Panpot).

112.P.SHIFTER 1 FEEDBACK 100

• Feedback 1(FEEDBACK 1):0 to 100

Here you can select the amount of Pitch - shifted sound that you want to be fed back. Only the Pitch Shifter I sound is fed back.

112.P.SHIFTER 1 LEVEL 100

Pitch Shift Level 1/2/3/4(LEVEL 1/2/3/4):0 to 100

Adjusts the volume of the Pitch - shifted sound.

FILTER

Here settings are made for the Low - pass and High - pass Filter parameters.

112.P.SHIFTER LP FILTER 12kHz

■ Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (= P. 24). When set at THRU, the Low-pass Filter is inactive.

112.P.SHIFTER HP FILTER 1kHz

● High - pass Filter(HP FILTER):THRU, 30Hz to 1kHz

Controls the cut-off frequency of the High-pass Filter (P. 24). When set at THRU, the High-pass Filter is inactive.

☐ DIRECT L/R

Controls the Direct sound.

112.DIRECT LEVEL L 100 ● Direct Level L/R(DIRECT LEVEL L/R):0 to 100

Adjusts the volume of the direct sound for each channel.

☐ MASTER

Controls the overall volume.

112.MASTER LEVEL 100 ■ Master Level(LEVEL):0 to 100

Adjusts the overall volume (Actual level output by the SE - 50).

☐ MIDI CONTROL

The MIDI Control parameters are as follows.

* For details on MIDI Control, see "MIDI Control" (P. 98).

112.MIDI CONTROL RECEIVE OFF •MIDI Control Receive(MIDI CONTROL RECEIVE):
OFF, AF TOUCH, P.BEND, #0 to #31, #64 to #95

Provides selection of the type of MIDI data to be received.

112.MIDI CTL ASH PITCH FINE 1 •MIDI Control Assign(MIDI CTL ASN): PITCH FINE1, MASTER LEVEL

Select the parameter you wish to have controlled.

112.MIDI CTL MIN

MIDI Control Minimum(MIDI CTL MIN):

This setting specifies the lowest value that will be valid for control.

* The value must be within the range allowed for the parameter.

112.MIDI CTL MAX

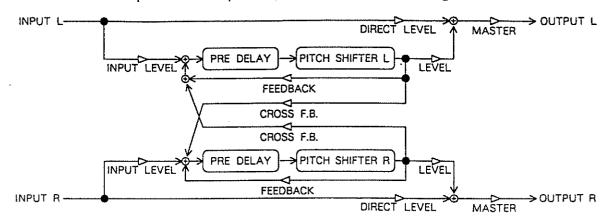
MIDI Control Maximum(MIDI CTL MAX):

This setting specifies the highest value that will be valid for control.

13) STEREO PITCH SHIFTER (No.113)

113 St.P.Shifter ST.PITCH SHIFTER

This Effector allows you to apply Pitch Shifts independently to each channel. It provides for the pitch to be shifted up to one octave in either direction from the original sound.



* Due to the structure, the Pitch - shifted sound may tend to be slightly delayed even if Pre Delay is set to "0 ms".

PITCH SHIFTER L/R The parameters set for Pitch Shifter are as follows.

+12

● Pitch L/R(PITCH L/R): - 12 to +12

Setting for the amount of pitch change desired, in semitones.

.SHIFTER +50

● Fine L/R(FINE L/R): - 50 to +50

Provides precise adjustment of the pitch change.

- * One unit for "PITCH" is equivalent to 100 units for "FINE".
- * If you assign "FINE" for MIDI Control, the values available for pitch changes will range from - 1250 to +1250.

3.F. SHIF TER 600ms

Pre Delay L/R(PRE DELAY L/R):0 to 600ms

After the direct sound has started, this is the amount of time it takes before the Pitch - shifted sound is produced. Ordinarily, it should be set at "0 ms".

SHIF 100

Feedback L/R(FEEDBACK L/R):0 to 100

Here you can select the amount of Pitch - shifted sound that you want to be fed back.



Cross Feedback L/R(CROSS F.B. L/R):0 to 100

This algorithm allows you to feed back a Pitch - shifted signal to its opposite channel. This setting determines the amount that is to be fed back in this way.

SHIF

■ Low - pass Filter L/R(LP FILTER L/R):500Hz to 16kHz, THRU

Controls the cut - off frequency of the Low - pass Filter (...r P 24), When set at THRU, the Low - pass Filter is inactive.

113.P.SHIFTER L HP FILTER 1kHz

● High - pass Filter L/R(HP FILTER L/R):THRU, 30Hz to 1kHz

Controls the cut-off frequency of the High-pass Filter (P. 24). When set at THRU, the High-pass Filter is inactive.

113.P.SHIFTER L INPUT LEVEL 100

● Input Level L/R(INPUT LEVEL L/R):0 to 100

Adjusts the level, for each channel, of the signals to be input for Pitch Shifter.

113.P.SHIFTER L EFFECT LEVEL 100

• Effect Level L/R(EFFECT LEVEL L/R):0 to 100

Adjusts the volume of the Pitch - shifted sound.

113.P.SHIFTER L DIRECT LEVEL 100

• Direct Level L/R(DIRECT LEVEL L/R):0 to 100

Adjusts the volume of the direct sound.

113.P.SHIFTER R STEREO LINK ON

Stereo Link (STEREO LINK):ON/OFF

When turned on, the Pitch Shifters for each channel are synchronized, so the pitch is shifted while preserving the positioning of the stereo image.

■ MASTER

Adjusts the overall volume.

113.MASTER LEVEL 100

● Master Level(LEVEL):0 to 100

Adjusts the overall volume (Actual level output by the SE - 50).

☐ MIDI CONTROL

The MIDI Control parameters are as follows.

* For details on MIDI Control, see "MIDI Control" (\$\sigma\$ P. 98).

113.MIDI CONTROL RECEIVE OFF

•MIDI Control Receive(MIDI CONTROL RECEIVE): OFF, AF TOUCH, P.BEND, #0 to #31, #64 to #95

Provides selection of the type of MIDI data to be received.

113.MIDI CTL ASN FITCH FINE L

● MIDI Control Assign(MIDI CTL ASN):PITCH FINE L, MASTER LEVEL

Select the parameter you wish to have controlled.

* If you wish to control FINE for both channels (L and R), set the STEREO LINK "On".

113.MIDI CTL MIN

MIDI Control Minimum(MIDI CTL MIN):

This setting specifies the lowest value that will be valid for control.

* The value must be within the range allowed for the parameter.

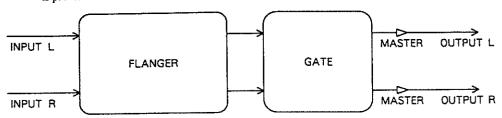
113.MIDI CTL MAK

• MIDI Control Maximum(MIDI CTL MAX):

This setting specifies the highest value that will be valid for control.

14) STEREO FLANGER (No.114)

114 St.Flanger STEREO FLANGER This effector produces an effect that could be likened to the sound of a jet plane's ascent and descent. Since it supports stereo input, the Flanging effect is obtained while still preserving the positioning of the stereo image. Additionally, a Gate feature that can be periodically turned on/off is provided. This allows the sound to be muted at desired intervals.



☐ FLANGER

Settings are made for the following Flanger parameters.

114.FLANGER MODE 2

Mode(MODE):1, 2

Select the type of Flanging desired.

Mode 1: Provides an ordinary flanging effect.

Mode 2: Provides a more pronounced flanging effect.

114.FLANGER RATE 100

Rate(RATE):0 to 100

Adjusts the rate of the modulation for the Flanger.

114.FLANGER DEPTH 100

Depth(DEPTH):0 to 100

Adjusts the depth of the modulation for the Flanger.

114.FLANGER MANUAL 100

Manual (MANUAL):0 to 100

Sets the center frequency for application of the Flanger effect.

114.FLANGER RESONANCE 100

Resonance (RESONANCE):0 to 100

This setting determines the amount of Resonance, the higher the value, the more unique the sound becomes.

114.FLANGER MOD.PHASE 180de9

Modulation Phase(MOD.PHASE):0 to 180deg

Provides an adjustment for how much the modulation applied to one channel will be different than that for the other channel. When set to "0 deg", the modulation applied to both channels will be identical. With a value of "180 deg", the way the modulation is applied to one channel will be the exact opposite of that for the other channel.

GATE

The following Gate parameters are available.

114.GATE OM/OFF ON

● On/Off(ON/OFF):ON/OFF

Turns on or off the Gate function.

114.GATE RATE 100

Rate(RATE):0 to 100

Adjusts the rate at which the sound will be muted.

☐ MASTER

Adjusts the overall volume.

114.MASTER LEVEL 100 ■ Master Level(LEVEL):0 to 100

Adjusts the overall volume (Actual level output by the SE - 50).

☐ MIDI CONTROL

The MIDI Control parameters are as follows.

* For details on MIDI Control, see "MIDI Control" (P. 98).

114.MIDI CONTROL RECEIVE OFF •MIDI Control Receive(MIDI CONTROL RECEIVE): OFF, AF TOUCH, P.BEND, #0 to #31, #64 to #95

Provides selection of the type of MIDI data to be received.

114.MIDI CTL ASN FLANGER RATE •MIDI Control Assign(MIDI CTL ASN):

FLANGER RATE, GATE ON/OFF, GATE ON/OFF(TRIG), GATE RATE, MASTER LEVEL

Select the parameter you wish to have controlled.

About GATE ON/OFF (TRIG)

This function is selected when you wish to use the "Unlatch - type" Pedal (such as a Hold Pedal) or the Bender Lever (Pitch Bend or Modulation) of the keyboard in order to switch the Gate "ON/OFF". The "Unlatch - type" pedal or the Bender Lever can then be used to toggle between ON and OFF.

* If instead you prefer to obtain Gate changes only while the "Unlatch - type" pedal is kept depressed, select "GATE ON/OFF".

114.MIDI CTL MIN

MIDI Control Minimum(MIDI CTL MIN):

This setting specifies the lowest value that will be valid for control.

* The value must be within the range allowed for the parameter.

114.MIDI CTL MAX

MIDI Control Maximum(MIDI CTL MAX):

This setting specifies the highest value that will be valid for control.

15) STEREO PHASER (No.115)

115 St.Phaser STEREO PHASER This Effector produces a spacious sound by adding to the original sound other portions which have been shifted in phase. Since it supports stereo input, the Phaser effect is obtained while still preserving the positioning of the stereo image.

□ PHASER

Settings are made for the following Phaser parameters.

115.PHASER MODE 4

Mode(MODE):1 to 4

Provides a selection for the manner in which the Phaser is applied. The higher the number, the more pronounced the effect becomes.

115.PHASER RATE 100

● Rate(RATE):0 to 100

Adjusts the rate at which the Phaser is applied.

115.PHASER DEPTH 100

Depth(DEPTH):0 to 100

Adjusts the depth at which the Phaser is applied.

115.PHASER MANUAL 100

Manual (MANUAL):0 to 100

Sets the center frequency for application of the Phaser effect.

115.PHASER RESONANCE 100

Resonance (RESONANCE):0 to 100

This setting determines the amount of Resonance. The higher the value, the more unique the sound becomes.

115.PHASER MOD.PHASE 180de9

Modulation Phase(MOD.PHASE):0 to 180deg

Provides an adjustment for how much the Phaser effect applied to one channel will be different than that for the other channel. When set to "0 deg", the Phaser effect is applied to both channels in an identical manner. With a value of "180 deg", the way the Phaser effect is applied to one channel will be the exact opposite of that for the other channel.

☐ MASTER

Adjusts the overall volume.

115.MASTER LEVEL 100

Master Level(LEVEL):0 to 100

Adjusts the overall volume (Actual level output by the SE - 50).

☐ MIDI CONTROL

The MIDI Control Parameters are as follows.

* For details on MIDI Control, see "MIDI Control" (## P. 98).

115.MIDI CONTROL RECEIVE OFF

MIDI Control Receive(MIDI CONTROL RECEIVE):

OFF, AF TOUCH, P.BEND, #0 to #31, #64 to #95

Provides selection of the type of MIDI data to be received.

115.MIDI CTL ASN PHASER RATE

MIDI Control Assign(MIDI CTL ASN):
PHASER RATE, PHASER DEPTH, MASTER LEVEL

Select the parameter you wish to have controlled.

115.MIDI CTL MIN

• MIDI Control Minimum(MIDI CTL MIN):

This setting specifies the lowest value that will be valid for control.

* The value must be within the range allowed for the parameter.

115.MIDI CTL MAX

MIDI Control Maximum(MIDI CTL MAX):

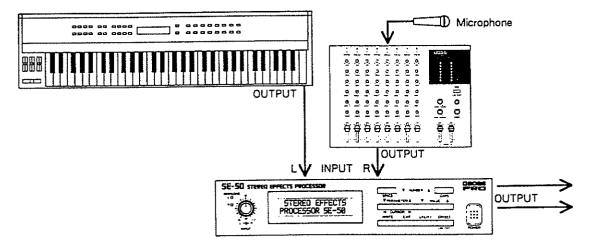
This setting specifies the highest value that will be valid for control.

4. Algorithms Combining Two or More Effectors

When two or more effectors are combined, even more interesting effects can be obtained. Algorithm numbers 116 through 124 are arranged to be suitable for a variety of instruments.

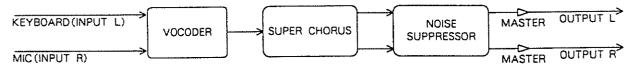
16) VOCODER (No.116)

116 Vocoder VOCODER This algorithm converts sound from a microphone, such as that of a person singing, to the pitch of sounds output from a keyboard. Signals arriving from a microphone are divided into 7 frequency portions. Then, each frequency portion is changed to correspond with the signals input from a keyboard. When using this algorithm, a setup such as shown below should be used.



- * We recommend that the microphone should be pre amplified first (by a mixer, etc.).
- * The sound you use on the keyboard should be of the type that sustains well, such as a brass or strings sound.

This algorithm is configured as follows:



□ VOCODER

Settings are made for the following Vocoder parameters.

116.Vocader SENS 100 Sens (SENS):0 to 100

Adjusts the input sensitivity for the microphone (R Channel).

116.Vocoder VOICE CHAR1 100 ● Voice Character 1/2/3/4/5/6/7(VOICE CHAR 1/2/3/4/5/6/7):0 to 100 Adjusts the volume for each frequency band.

116.Vocoder HI FREQ MIX 100 • High Frequency Mix (HI FREQ MIX):0 to 100

Enhances the upper frequencies of the sound input from a microphone. When added to the output, it makes the sound more realistic and human.

☐SUPER CHORUS

The Chorus parameters are as follows.

116.SUPER CHORUS PRE DELAY 60ms

Pre Delay(PRE DELAY):0 to 60ms

After the direct sound has started, this is the amount of time it takes before the Chorus effect begins.

116.SUPER CHORUS RATE 100

Rate(RATE):0 to 100

Adjusts the rate of the modulation for Chorus.

116.SUPER CHORUS DEPTH 100

Depth(DEPTH):0 to 100

Adjusts the modulation depth for Chorus.

* If you want to turn Chorus off, set the Pre Delay to "0 ms" and the Depth to "0".

□ NOISE SUPPRESSOR

The following are the parameters that are set for the Noise Suppressor. When the level of the signal input from the microphone falls below the set level, the signal is muted to eliminate unwanted noise.

116.N.SUPPRESSOR THRESHOLD 100

● Threshold (THRESHOLD):0 to 100

This setting specifies the level at which the Noise Suppressor starts working. When the level of the microphone signal falls below this level, the signal is muted.

☐ MASTER

Adjusts the overall volume.

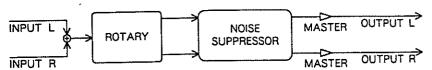
116.MASTER LEVEL 100

● Master Level(LEVEL):0 to 100

Adjusts the overall volume (Actual level output by the SE - 50).

17) ROTARY (No.117)

117 Rotary ROTARY This algorithm simulates a rotary speaker. It is a unique effect that is produced by the fluctuations in sound that occur when a speaker is rotated.



□ ROTARY

Produces a sound much like that obtained with rotary speakers. Conventionally, separate speakers rotate for the upper and lower frequency ranges. Thus with the SE - 50, separate settings are made for upper and lower ranges.

117.ROTARY DRIVE 100 Drive (DRIVE):0 to 100

Applies distortion to the sound.

117.ROTARY SPEED SLOW Speed (SPEED):SLOW, FAST

Provides selection for the speed of the sound's undulations.

117.ROTARY LO RATE SLOW 100 ● Low Rate Slow(LO RATE SLOW):0 to 100

When SLOW is selected for SPEED, this adjusts the rate for the lower range.

117.ROTARY LO RATE FAST 100 Low Rate Fast(LO RATE FAST):0 to 100

When FAST is selected for SPEED, this adjusts the rate for the lower range.

117.ROTARY HI RATE SLOW 100 High Rate Slow(HI RATE SLOW):0 to 100

When SLOW is selected for SPEED, this adjusts the rate for the upper range.

117.ROTARY HI RATE FAST 100 ● High Rate Fast(HI RATE FAST):0 to 100

When FAST is selected for SPEED, this adjusts the rate for the upper range.

117.ROTARY LO RISE TIME 100 ■ Low Rise Time(LO RISE TIME):0 to 100

This adjusts the rapidness with which the lower range will change when the Speed is switched from SLOW to FAST (or the reverse).

117.ROTARY HI RISE TIME 100 High Rise Time(HI RISE TIME):0 to 100

This adjusts the rapidness with which the upper range will change when the Speed is switched from SLOW to FAST (or the reverse).

117.ROTARY LOW LEVEL 100 ● Low Level(LOW LEVEL):0 to 100

Adjusts the volume of the lower range.

117,ROTARY HIGH LEVEL 100 High Level(HIGH LEVEL):0 to 100

Adjusts the volume of the upper range.

1117 BOTOBU	
III/,KUIHKY	
ISEPARATION	1 (4)4
[,	TOO

Separation(SEPARATION):0 to 100

Controls the degree to which the sound takes on an expansive quality.

■ NOISE SUPPRESSOR

The following are the parameters that are set for the Noise Suppressor. When the level of the signal input falls below the set level, it is muted to eliminate unwanted noise.

117.N.SUPPRESSOR THRESHOLD 100

● Threshold (THRESHOLD):0 to 100

This setting specifies the level at which the Noise Suppressor starts working. When the level of the signal falls below this level, the signal is muted.

■ MASTER

Adjusts the overall volume.

117.MASTER LEVEL 100

● Master Level(LEVEL):0 to 100

Adjusts the overall volume (Actual level output by the SE - 50).

☐ MIDI CONTROL

The MIDI Control Parameters are as follows.

* For details on MIDI Control, see "MIDI Control" (\$\sigma\$ P. 98).

117.MIDI CONTROL RECEIVE OFF

•MIDI Control Receive(MIDI CONTROL RECEIVE):
OFF, AF TOUCH, P.BEND, #0 to #31, #64 to #95

Provides selection of the type of MIDI data to be received.

117.MIDI CTL ASN ROTARY DRIVE

MIDI Control Assign(MIDI CTL ASN):DRIVE, SPEED, SPEED(TRIG), MASTER LEVEL

Select the parameter you wish to have controlled.

About SPEED (TRIG)

This function is selected when you wish to use the "Unlatch - type" Pedal (such as a Hold Pedal) or the Bender Lever (Pitch Bend or Modulation) of the keyboard in order to switch the Rotary "SPEED". The "Unlatch - type", pedal or the Bender Lever can then be used to toggle between FAST and SLOW.

* If instead you prefer to obtain speed changes only while the "Unlatch - type" pedal is kept depressed, select "SPEED".

117.MIDI CTL MIN

MIDI Control Minimum(MIDI CTL MIN):

This setting specifies the lowest value that will be valid for control.

* The value must be within the range allowed for the parameter.

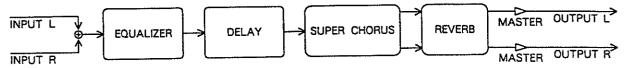
117.MIDI CTL MAX

MIDI Control Maximum(MIDI CTL MAX):

This setting specifies the highest value that will be valid for control

18) KEYBOARD MULTI 1 (No.118)

118 Keyboard 1 KEYBOARD MULTI 1 This setup is designed for use with a keyboard. Since it is equipped with Delay, it goes well with synth solos.



□ EFFECT ON/OFF

Used to turn effects on or off.

118.EFF.ON/OFF EQ+DL+CH+RU Using PARAMETER ▲ ▼, select the effector. Then use VALUE ▲ ▼ to turn it on or off.

☐ EQUALIZER

The Equalizer parameters are as follows.

118.EQUALIZER LOW EQ +12dB ● Low EQ (LOW EQ): - 12dB to +12dB

Adjusts the tone of the lower range.

118.EQUALIZER MID FREQ 4kHz ● Middle Frequency(MID FREQ):250Hz to 4kHz

Sets the center frequency that will be employed when adjusting the middle range.

118.EQUALIZER MID EQ +12dB ■ Middle EQ(MID EQ): - 12dB to +12dB

Adjusts the tone of the middle range portion of the sound.

118.EQUALIZER HIGH EQ +12dB ● High EQ(HIGH EQ): - 12dB to +12dB

Adjusts the tone of the high range portion of the sound.

118.EQUALIZER LP FILTER 16kHz ● Low - pass Filter(LP FILTER):500Hz to 16kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (= P. 24). When set at THRU, the Low-pass Filter is inactive.

118.EQUALIZER LEVEL +12dB ● Equalizer Level(LEVEL): - 12dB to +12dB

Adjusts the volume of the sound after it has been routed through the Equalizer.

□ DELAY

The following settings are made for the Delay parameters.

118.DELÄY D.TIME 800ms Delay Time(D.TIME):0 to 800ms

Adjusts the Delay Time.

118.DELAY FEEDBACK 100

• Feedback (FEEDBACK):0 to 100

Feedback refers to the process of feeding a portion of the delayed sounds back into the delay circuit. Here you set the amount that is to be fed back. This affects the number of repetitions occurring in the delay.

118.DELAY LEVEL 100	● Delay Level (LEVEL):0 to 100 Adjusts volume of delayed sound.
118.DELAV LP FILTER 16kHz	● Low - pass Filter(LP FILTER):500Hz to 16kHz, THRU Controls the cut - off frequency of the Low - pass Filter (== P. 24). When set at THRU, the Low - pass Filter is inactive.
SUPER CHORUS	The Chorus parameters are as follows.
118.SUPER CHORUS PRE DELAY 60ms	• Pre Delay(PRE DELAY):0 to 60ms After the direct sound has started, this is the amount of time it takes before the Chorus effect begins.
118.SUPER CHORUS RATE 100	● Rate(RATE):0 to 100 Adjusts the rate of the modulation for Chorus.
118.SUPER CHORUS DEPTH 100	● Depth(DEPTH):0 to 100 Adjusts the modulation depth for Chorus.
□REVERB	Settings for Reverb are as follows.
118.REVERB REV TIME 20.0s	Reverb Time(REV TIME):0.1 to 20.0s Adjusts the Reverb Time (⇒ P. 23).
118.REVERB PRE DELAY 100ms	● Pre Delay(PRE DELAY):0 to 100ms Adjusts the Pre Delay (= P. 23).
118.REVERB LP FILTER 16kHz	● Low - pass Filter(LP FILTER):500Hz to 16kHz, THRU Controls the cut - off frequency of the Low - pass Filter (⇒ P. 24). When set at THRU, the Low - pass Filter is inactive.
118.REVER8 LEVEL 100	Reverb Level(LEVEL):0 to 100 Adjusts the volume of the Reverb sound.
MASTER	Adjusts the overall volume.
118.MASTER LEVEL 100	● Master Level(LEVEL):0 to 100 Adjusts the overall volume (Actual level output by the SE - 50).

☐ MIDI CONTROL

The MIDI Control parameters are as follows.

* For details on MIDI Control, see "MIDI Control" (P. 98).

118.MIDI CONTROL RECEIVE OFF

MIDI Control Receive(MIDI CONTROL RECEIVE):
 OFF, AF TOUCH, P.BEND, #0 to #31, #64 to #95

Provides selection of the type of MIDI data to be received.

118.MIDI CTL ASN CHORUS RATE

MIDI Control Assign(MIDI CTL ASN):CHORUS RATE, DELAY LEVEL, REVERB LEVEL, MASTER LEVEL

118.MIDI CTL MIN

MIDI Control Minimum(MIDI CTL MIN):

Select the parameter you wish to have controlled.

This setting specifies the lowest value that will be valid for control.

* The value must be within the range allowed for the parameter.

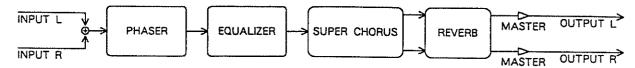
118.MIDI CTL MAX

MIDI Control Maximum(MIDI CTL MAX):

This setting specifies the highest value that will be valid for control.

19) KEYBOARD MULTI 2 (No.119)

119 Keyboard 2 KEYBOARD MULTI 2 This algorithm is designed to be used with keyboards. Through skillful use of the Phaser, it is quite effective with strings or other sustained sounds.



☐ EFFECT ON/OFF

Used to turn effects on or off.

119.EFF.ON/OFF |PH+EQ+CH+RU Using PARAMETER ▲ ▼, select the effector. Then use VALUE ▲ ▼ to turn it on or off.

☐ PHASER

Settings are made for the following Phaser parameters.

119.PHASER MODE 4

● Mode(MODE):1 to 4

Provides a selection for the manner in which the Phaser is applied. The higher the number, the more pronounced the effect becomes.

119.PHASER RATE 100

Rate(RATE):0 to 100

Adjusts the rate at which the Phaser is applied.

119.PHASER DEPTH 100

Depth(DEPTH):0 to 100

Adjusts the depth at which the Phaser is applied.

119.PHASER MANUAL 100

Manual (MANUAL):0 to 100

Sets the center frequency for application of the Phaser effect.

119.PHASER RESOMANCE 100

Resonance (RESONANCE):0 to 100

This setting determines the amount of Resonance. The higher the value, the more unique the sound becomes.

119.PHASER STEP 100

Step (STEP):0 to 100

This setting determines the shape of the phaser's waveform. With higher values, the "Steps" in the waveform become more pronounced.

☐ EQUALIZER

The Equalizer parameters are as follows.

119.EQUALIZER LOW EQ +12dB

Low EQ (LOW EQ): - 12dB to +12dB

Adjusts the tone of the lower range.

119.EQUALIZER MID FREQ 4kHz

Middle Frequency (MID FREQ):250Hz to 4kHz

Sets the center frequency that will be employed when adjusting the middle range.

■ Middle EQ(MID EQ): - 12dB to +12dB 119.EQUALIZER +12dB Adjusts the tone of the middle range portion of the sound. ● High EQ(HIGH EQ): - 12dB to +12dB 119.EQUALIZER Adjusts the tone of the high range portion of the sound. +12dB HIGH EQ ● Equalizer Level(LEVEL): - 12dB to +12dB 119.EQUALIZER Adjusts the volume of the sound after it has been routed through the Equalizer. +12dB LEVEL The Chorus parameters are adjusted using the following. SUPER CHORUS Pre Delay(PRE DELAY):0 to 60ms CHORUS 119.SUPER After the direct sound has started, this is the amount of time it takes before the Chorus effect begins. PRE DELAY 69ms Rate(RATE):0 to 100 119.SUPER CHORUS RATE 100 Adjusts the rate of the modulation for Chorus. Depth(DEPTH):0 to 100 119.SUPER CHORUS 100 DEPTH Adjusts the modulation depth for Chorus. Settings for Reverb are as follows. □ REVERB Reverb Time(REV TIME):0.1 to 20.0s 119.REVERB 20.0s Adjusts the Reverb Time (P. 23). TIME Pre Delay(PRE DELAY):0 to 200ms 119.REVERB 200ms PRE DELAY Adjusts the Pre Delay (P. 23). ● Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU 119.REVERB LP FILTER Controls the cut-off frequency of the Low-pass Filter (= P. 24). When set at THRU, the 12kHz Low - pass Filter is inactive. Reverb Level(LEVEL):0 to 100 119.REVERB 100 Adjusts the volume of the Reverb sound. LEVEL Adjusts the overall volume. ☐ MASTER

Master Level(LEVEL):0 to 100

Adjusts the overall volume (Actual level output by the SE - 50).

119, MASTER

LEVEL

190

☐ MIDI CONTROL

The MIDI Control Parameters are as follows.

* For details on MIDI Control, see "MIDI Control" (P. 98).

119.MIDI CONTROL RECEIVE OFF

■MIDI Control Receive(MIDI CONTROL RECEIVE): OFF, AF TOUCH, P.BEND, #0 to #31, #64 to #95

Provides selection of the type of MIDI data to be received.

119.MIDI CTL ASN PHASER RATE

• MIDI Control Assign(MIDI CTL ASN):

PHASER RATE, PHASER DEPTH, PHASER STEP, CHORUS RATE, REVERB LEVEL, MASTER LEVEL

Select the parameter you wish to have controlled.

119.MIDI CTL MIN

MIDI Control Minimum(MIDI CTL MIN):

This setting specifies the lowest value that will be valid for control.

* The value must be within the range allowed for the parameter.

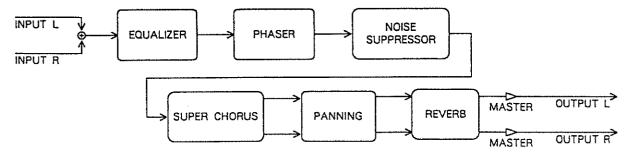
119.MIDI CTL MAX

MIDI Control Maximum(MIDI CTL MAX):

This setting specifies the highest value that will be valid for control.

20) RHODES (No.120)

120 Rhodes RHODES This algorithm creates a Rhodes type sound. It is most effective when used with an electronic piano sound



☐ EFFECT ON/OFF

Used to turn effects on or off.

120.EFF.ON/OFF EQ+PH+CH+PN+RU Using PARAMETER , select the effector. Then use VALUE to turn it on or off.

□ EQUALIZER

Settings for the 3 - band Equalizer are as follows.

120.EQUALIZER LOW EQ +12dB ● Low EQ (LOW EQ): - 12dB to +12dB

Adjusts the tone of the lower range.

120.EQUALIZER MID FREQ 4kHz Middle Frequency (MID FREQ):250Hz to 4kHz

Sets the center frequency that will be employed when adjusting the middle range.

120.EQUALIZER MID EQ +12d8 ■ Middle EQ(MID EQ): - 12dB to +12dB

Adjusts the tone of the middle range portion of the sound.

120.EQUÁLIZER HIGH EQ +12dB ◆ High EQ(HIGH EQ): - 12dB to +12dB

Adjusts the tone of the high range portion of the sound.

120.EQUALIZER LF FILTER 12kHz ■ Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (\approx P. 24). When set at THRU, the Low-pass Filter is inactive.

120.EQUALIZER LEVEL +12dB ◆ Equalizer Level(LEVEL): - 12dB to +12dB

Adjusts the volume of the sound after it has been routed through the Equalizer.

□ PHASER

Settings can be made for the following Phaser parameters.

120.PHASER RATE 100 Rate(RATE):0 to 100

Adjusts the rate at which the Phaser is applied.

120.PHASER DEPTH 100	● Depth(DEPTH):0 to 100 Adjusts the depth at which the Phaser is applied.
120.PHASER MANUAL 100	● Manual (MANUAL):0 to 100 Sets the center frequency for application of the Phaser effect.
120.PHASER RESONANCE 100	■ Resonance (RESONANCE):0 to 100 This setting determines the amount of Resonance. The higher the value, the more unique the sound becomes.
□ NOISE SUPPRESSOR	The following are the parameters that are set for the Noise Suppressor. When the level of the signal input falls below the set level, it is muted to eliminate unwanted noise.
120.N.SUPPRESSOR THRESHOLD 100	● Threshold (THRESHOLD):0 to 100 This setting specifies the level at which the Noise Suppressor starts working. When the level of the signal falls below this level, the signal is muted.
120.N.SUPPRESSOR RELEASE 100	■ Release (RELEASE):0 to 100 This setting determines the amount of time it will take for sound volume to reach "0", after the Noise Suppressor has started working.
120.N.SUPPRESSOR LEVEL 100	● Level(LEVEL):0 to 100 Adjusts the volume of the sound, after it has passed through the Noise Suppressor.
SUPER CHORUS	The Chorus parameters are as follows.
120.SUPER CHORUS PRE DELAY 60ms	• Pre Delay(PRE DELAY):0 to 60ms After the direct sound has started, this is the amount of time it takes before the Chorus effect begins.
120.SUPER CHORUS RATE 100	● Rate(RATE):0 to 100 Adjusts the rate of the modulation for Chorus.
120.SUPER CHORUS DEPTH 100	● Depth(DEPTH):0 to 100 Adjusts the modulation depth for Chorus.
PANNING	These parameters control the panning, which allows sound to be panned to the right and left when the output is in stereo.
120.PANNING RATE 100	● Rate(RATE):0 to 100 Adjusts the rate at which the sound will pan left and right

Depth(DEPTH):0 to 100

Adjusts the volume at which the sound will pan left and right

120.PANNING CEPTH

100

120.PANNING MOD.WAVE TRI

Modulation Wave (MOD.WAVE):TRI, SQR

The manner in which the sound pans to right and left is chosen in terms of the waveform.

TRI (TRIANGLE: Triangle Wave): Sounds move smoothly to right and left.

SQR (SQUARE: Square Wave): Sounds move abruptly to right and left.

□ REVERB

Settings for Reverb are as follows.

120.REVERB REV TIME 20.0s Reverb Time(REV TIME):0.1 to 20.0s

Adjusts the Reverb Time (P. 23).

120.REVERB PRE DELAY 200ms Pre Delay(PRE DELAY):0 to 200ms

Adjusts the Pre Delay (P. 23).

120.REVERB LP FILTER 12kHz ■ Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (P. 24). When set at THRU, the Low-pass Filter is inactive.

120.REVERB LEVEL 100 Reverb Level(LEVEL):0 to 100

Adjusts the volume of the Reverb sound.

☐ MASTER

Adjusts the overall volume.

120.MASTER LEVEL 100 ● Master Level(LEVEL):0 to 100

Adjusts the overall volume (Actual level output by the SE - 50).

☐ MIDI CONTROL

The MIDI Control Parameters are as follows.

* For details on MIDI Control, see "MIDI Control" (> P. 98).

120.MIDI CONTROL RECEIVE OFF MIDI Control Receive(MIDI CONTROL RECEIVE):
 OFF, AF TOUCH, P.BEND, #0 to #31, #64 to #95

Provides selection of the type of MIDI data to be received.

120,MIDI ČTL ASN PHASER RATE MIDI Control Assign(MIDI CTL ASN):

PHASER RATE, PHASER DEPTH, N.SUPPRESSOR LEVEL, CHORUS RATE, PANNING RATE, PANNING DEPTH, REVERB LEVEL, MASTER LEVEL

Select the parameter you wish to have controlled.

120.MIDI CTL MIN

• MIDI Control Minimum(MIDI CTL MIN):

This setting specifies the lowest value that will be valid for control.

* The value must be within the range allowed for the parameter.

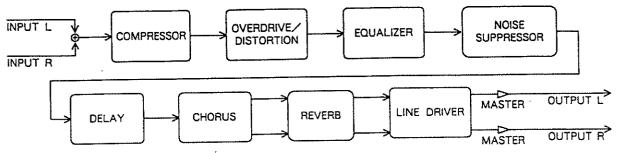
120.MIDI CTL MAX

MIDI Control Maximum(MIDI CTL MAX):

This setting specifies the highest value that will be valid for control.

21) GUITAR MULTI (No.121)

121 Guitar Multi GUITAR MULTI These settings are for use with guitars. All the effectors commonly used with guitars are included.



☐ EFFECT ON/OFF

Used to turn effects on or off.

121.EFF.ON/OFF CO+OD+Q+D+CH+R+L Using PARAMETER ▲ ▼, select the effector. Then use VALUE ▲ ▼ to turn it on or off.

☐ COMPRESSOR

This effector suppresses signals that have too high a level, while it enhances those that are too weak. The output signal is thus made more even.

121.COMPRESSOR SUSTAIN 100

Sustain(SUSTAIN):0 to 100

Sets the amount of time that weaker signals will be brought up and maintained at a certain level.

121.COMPRESSOR ATTACK 100

Attack (ATTACK):0 to 100

Adjusts the strength of the attack at the time sound is input.

121.COMPRESSOR LEVEL 100

● Level (LEVEL):0 to 100

Adjusts the volume of the sound after it has passed through the compressor.

OVERDRIVE / DISTORTION

Adds distortion to sounds to make them more exciting.

121.00/05 Mode od turb off Mode(MODE):OD TURBO OFF, OD TURBO ON,
 DS TURBO OFF, DS TURBO ON

This allows you to select the type of distortion. With OVERDRIVE (OD), you obtain the distortion of a tube amp. With DISTORTION (DS), the sound has a stronger distortion applied to it. When TURBO is off, the distortion is normal; when on, the middle range is emphasized.

121.0D/DS DRIVE 100 Drive (DRIVE):0 to 100

Controls the degree to which distortion is applied

121.0D/DS LEVEL 100

■ Level(LEVEL):0 to 100

Adjusts the volume of the sound after it has passed through the distortion processor.

☐ EQUALIZER

The Equalizer parameters are as follows.

121.EQUALIZER LOW EQ +12dB ■ Low EQ (LOW EQ): - 12dB to +12dB

Adjusts the tone of the lower range.

121.EQUALIZER MID FREQ 4kHz Middle Frequency(MID FREQ):250Hz to 4kHz

Sets the center frequency that will be employed when adjusting the middle range.

121.EQUALIZER MID EQ +12dB ● Middle EQ(MID EQ): - 12dB to +12dB

Adjusts the tone of the middle range portion of the sound.

121.EQUALIZER HIGH EQ +12dB ● High EQ(HIGH EQ): - 12dB to +12dB

Adjusts the tone of the high range portion of the sound.

121.EQUALIZER LEVEL +12dB ● Equalizer Level(LEVEL): - 12dB to +12dB

Adjusts the volume of the sound after it has been routed through the Equalizer.

☐ NOISE SUPPRESSOR

The following are the parameters that are set for the Noise Suppressor. When the level of the signal input falls below the set level, it is muted to eliminate unwanted noise.

121.N.SUPPRESSOR THRESHOLD 100 ● Threshold (THRESHOLD):0 to 100

This setting specifies the level at which the Noise Suppressor starts working. When the level of the signal falls below this level, the signal is muted.

121.M.SUPPRESSOR RELEASE 100 Release (RELEASE):0 to 100

This setting determines the amount of time it will take for sound volume to reach "0", after the Noise Suppressor has started working.

121.M.SUPPRESSOR LEVEL 100 Level(LEVEL):0 to 100

Adjusts the volume of the sound, after it has passed through the Noise Suppressor.

☐ DELAY

The following settings are made for the Delay parameters.

121.DELAY D.TIME 1200ms Delay Time(D.TIME):0 to 1200ms

Adjusts the Delay Time.

121.DELAY FEEDBACK 100 Feedback (FEEDBACK):0 to 100

Feedback refers to the process of feeding a portion of the delayed sounds back into the delay circuit. Here you set the amount that is to be fed back. This affects the number of repetitions occurring in the delay.

121.DELAY LEUEL 100 Delay Level (LEVEL):0 to 100

Adjusts volume of delayed sound.

☐ CHORUS

The Chorus parameters are as follows.

121.CHORUS MODE STEREO 1

Mode(MODE):MONO, STEREO1, STEREO2

The Chorus mode is selected here.

MONO: Output will be in mono.

STEREO 1:The Direct sound is output from the R channel, while the pitch - altered sound is output from the L Channel. These two parts become mixed in mid - air, producing the Chorus effect.

STEREO 2:Chorus sound which has its phase reversed is output on both channels. The expansiveness of the resulting sound is intensified.

* When output is mono, chorus effect is not gotten.

121.CHORUS RATE 100

● Rate(RATE):0 to 100

Adjusts the rate of the modulation for Chorus.

121.CHORUS DEPTH 100

Depth(DEPTH):0 to 100

Adjusts the modulation depth for Chorus.

121.CHORUS FEEDBACK 100

Feedback (FEEDBACK):0 to 100

This controls the amount of Feedback for the Chorus effect. The higher the value, the more distinctive the effect; a flanger - like effect can even be obtained.

☐ REVERB

Settings for Reverb are as follows.

121.REVERB REV TIME 20.0s Reverb Time(REV TIME):0.1 to 20.0s

Adjusts the Reverb Time (P. 23).

121.REVERB PRE DELAY 200ms

Pre Delay(PRE DELAY):0 to 200ms

Adjusts the Pre Delay (P. 23).

121.REVERB LP FILTER 12kHz

■ Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut - off frequency of the Low - pass Filter (= P. 24). When set at THRU, the Low - pass Filter is inactive.

121.REVERB LEVEL 100

Reverb Level(LEVEL):0 to 100

Adjusts the volume of the Reverb sound.

LINE DRIVER

Simulates the response of a guitar amplifier. Even when connected directly to a mixer (Line Input), the sound will be free of the sparseness associated with line input, and will have more body.

121.LINE DRIVER MODE 1

Mode(MODE):1, 2

The type of guitar amp simulation is chosen by its mode.

MODE1: Simulates a large tube amplifier.

MODE2: Simulates a smaller, built - in amplifier.

☐ MASTER

Controls the overall volume.

121.MASTER LEVEL 100 Master Level(LEVEL):0 to 100

Adjusts the overall volume (Actual level output by the SE - 50).

☐ MIDI CONTROL

The MIDI Control Parameters are as follows.

* For details on MiDI Control, see "MIDI Control" (\$\sigma\$ P. 98).

121.MIDI CONTROL RECEIVE OFF ●MIDI Control Receive(MIDI CONTROL RECEIVE): OFF, AF TOUCH, P.BEND, #0 to #31, #64 to #95

Provides selection of the type of MIDI data to be received.

121.MIDI CTL ASN OD/DS DRIVE MIDI Control Assign(MIDI CTL ASN):
 OD/DS DRIVE, N.SUPPRESSOR LEVEL, DELAY LEVEL,
 CHORUS RATE, REVERB LEVEL, MASTER LEVEL

Select the parameter you wish to have controlled.

121.MIDI OTL MIN

• MIDI Control Minimum(MIDI CTL MIN):

This setting specifies the lowest value that will be valid for control.

* The value must be within the range allowed for the parameter.

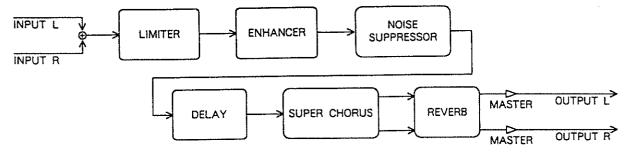
121.MIDI CTL MAX

MIDI Control Maximum(MIDI CTL MAX):

This setting specifies the highest value that will be valid for control.

22) VOCAL MULTI (No.122)

122 Vocal Multi VOCAL MULTI This algorithm is well suited for vocals. It can also be quite effective when used with bass or acoustic guitars.



□ EFFECT ON/OFF

Used to turn effects on or off.

122.EFF.ON/OFF LM+EH+DL+CH+RV Using PARAMETER , select the effector. Then use VALUE to turn it on or off.

LIMITER

Acts in controlling signals with a high input level; this helps prevent distortion.

122.LIMITER THRESHOLD

Threshold (THRESHOLD):0 to 100

This setting specifies the level at which the Limiter starts working. When an input signal is above the set level, the signal is suppressed.

122.LIMITER RATIO 2:1

100

● Ratio (RATIO):2:1, 5:1, 10:1, 20:1

Provides selection for the extent to which the signal will be suppressed while the Limiter is working (compression ratio).

122.LIMITER RELEASE 100

● Release (RELEASE):0 to 100

This setting determines the amount of time it will take for the Limiter to stop working completely after the signal has gone below the Threshold Level.

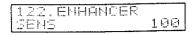
122.LIMITER LEUEL 100

Level(LEVEL):0 to 100

Adjusts the volume of the signal that has been routed through the Limiter.

☐ ENHANCER

Adds sound portions which have had their phase shifted to the source sound. This improves the sound's definition, giving it more presence (the Enhancing effect). Since settings can be made individually for upper and lower ranges, you can obtain precisely the enhancement you need for a particular situation.



Sens (SENS):0 to 100

Adjusts the extent to which the Enhancer will be applied, depending on the level of the input signal.

1 4 7 7	FINHAMOER	ļ
di stere din a	CHMHHH CE.	1
300.13	64 T T T	4 (75)75 1
	門主因	
12.00		-

■ Low Mix (LOW MIX):0 to 100

Adjusts the amount of phase - altered sound for the lower range that will be mixed in.

122.ENHANCER HIGH MIX 100

High Mix (HIGH MIX):0 to 100

Adjusts the amount of phase - altered sound for the upper range that will be mixed in.

□ NOISE SUPPRESSOR

The following are the parameters that are set for the Noise Suppressor. When the level of the input signal falls below the set level, it is muted to eliminate unwanted noise.

122.N.SUPPRESSOR THRESHOLD 100

● Threshold (THRESHOLD):0 to 100

This setting specifies the level at which the Noise Suppressor starts working. When the signal level falls below this level, it is muted.

122.H.SUPPRESSOR RELEASE 100

Release (RELEASE):0 to 100

This setting determines the amount of time it will take for the sound volume to reach "0" after the Noise Suppressor has started working.

□ DELAY

The following settings are made for the Delay parameters.

122.DELAY D.TIME 1200ms

Delay Time(D.TIME):0 to 1200ms

Adjusts the Delay Time.

122.DELAY FEEDBACK 100

• Feedback (FEEDBACK):0 to 100

Feedback refers to the process of feeding a portion of the delayed sounds back into the delay circuit. Here you set the amount that is to be fed back. This affects the number of repetitions occurring in the delay.

122.DELAY LEVEL 100

Delay Level (LEVEL):0 to 100

Adjusts the volume of the delayed sound.

☐ SUPER CHORUS

The Chorus parameters are as follows.

122.SUPER CHORUS PRE DELAY 60ms

Pre Delay(PRE DELAY):0 to 60ms

After the direct sound has started, this is the amount of time it takes before the Chorus effect begins.

122.SUPER CHORUS RATE 100

Rate(RATE):0 to 100

Adjusts the rate of the modulation for Chorus.

122.SUPER CHORUS DEPTH 100

Depth(DEPTH):0 to 100

Adjusts the modulation depth for Chorus.

□ REVERB

Settings for Reverb are as follows.

122.REVERB REV TIME 20.0s Reverb Time(REV TIME):0.1 to 20.0s

Adjusts the Reverb Time (P. 23).

122.REVERB PRE DELAY 200ms • Pre Delay(PRE DELAY):0 to 200ms

Adjusts the Pre Delay (P. 23).

122.REVERB LP FILTER 12kHz ● Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (P. 24). When set at THRU, the Low-pass Filter is inactive.

122.REVERB LEVEL 100 ● Reverb Level(LEVEL):0 to 100

Adjusts the volume of the Reverb sound.

☐ MASTER

Adjusts the overall volume.

122.MASTER LEVEL 100 ■ Master Level(LEVEL):0 to 100

Adjusts the overall volume (Actual level output by the SE - 50).

☐ MIDI CONTROL

The MIDI Control Parameters are as follows.

* For details on MIDI Control, see "MIDI Control" (P. 98).

122.MIDI CONTROL RECEIVE OFF ●MIDI Control Receive(MIDI CONTROL RECEIVE): OFF, AF TOUCH, P.BEND, #0 to #31, #64 to #95

Provides selection of the type of MIDI data to be received.

122.MIDI CTL ASH CHORUS RATE ●MIDI Control Assign(MIDI CTL ASN):

CHORUS RATE, DELAY LEVEL, REVERB LEVEL, MASTER LEVEL

Select the parameter you wish to have controlled.

122.MIDI CTL MIN

MIDI Control Minimum(MIDI CTL MIN):

This setting specifies the lowest value that will be valid for control.

* The value must be within the range allowed for the parameter.

122.MIDI CTL MAX

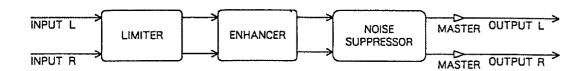
• MIDI Control Maximum(MIDI CTL MAX):

This setting specifies the highest value that will be valid for control.

* The value must be within the range allowed for the parameter.

23) STEREO ENHANCER (No.123)

123 St.Enhancer STEREO ENHANCER This algorithm combines the Limiter, Enhancer and Noise Suppressor. Since it accepts stereo input, effectors can be applied without losing any of the orientation in the sound image.



☐ EFFECT ON/OFF

Used to turn effects on or off.

123.EFF.ON/OFF LM+EH+NS Using PARAMETER , select the effector. Then use VALUE to turn it on or off.

LIMITER

Controls excessive signal levels to prevent distortion.

123.LIMITER THRESHOLD 100

● Threshold (THRESHOLD):0 to 100

Sets the level at which the limiter will start taking effect. When a signal is above the set level, the signal is suppressed.

123.LIMITER RATIO 2:1

Ratio (RATIO):2:1, 5:1, 10:1, 20:1

Selects the extent to which the signals will be suppressed when the Limiter is working. (compression ratio).

123.LIMITER RELEASE 100

Release (RELEASE):0 to 100

Adjustment for the amount of time that is to pass after the signal has gone below the threshold level before the Limiter cuts - off.

123.LIMITER LEVEL 100

● Level (LEVEL):0 to 100

Adjusts the volume of the signal that has been routed through the Limiter.

☐ ENHANCER

Adds sound portions which have had their phase shifted to the source sound. This improves the sound's definition, giving it more presence (the Enhancing effect). Since settings can be made individually for upper and lower ranges, you can obtain precisely the enhancement you need for a particular situation.

123.ENHANCER SENS 100

Sens (SENS):0 to 100

Adjusts the extent to which the Enhancer will be applied relative to the level of the input signal.

123.ENHANCER LOW MIX 100

Low Mix (LOW MIX):0 to 100

Adjusts the amount of phase - altered sound for the lower range that will be mixed in.

123.ENHÄNCER HIGH MIX 100

High Mix(HIGH MIX):0 to 100

Adjusts the amount of phase - altered sound for the upper range that will be mixed in.

☐ NOISE SUPPRESSOR

The following are the parameters that are set for the Noise Suppressor. When the input signal falls below the set level, it is muted to eliminate unwanted noise.

123.N.SUPPRESSOR THRESHOLD 100

● Threshold (THRESHOLD):0 to 100

This setting specifies the level at which the Noise Suppressor starts working. When the level of the signal falls below this level, it is muted.

123.N.SUPPRESSOR RELEASE 100

● Release (RELEASE):0 to 100

This setting determines the amount of time it will take for sound volume to reach "0" after the Noise Suppressor has started working.

☐ MASTER

Adjusts the overall volume.

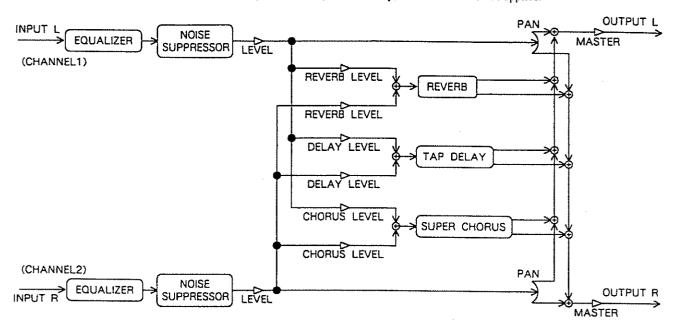
123.MASTER LEVEL 100

● Master Level(LEVEL):0 to 100

Adjusts the overall volume (Actual level output by the SE - 50).

24) 2CH MIXER (No.124)

124 2ch Mixer 2CH MIXER This is a 2 - Channel mixer. The Equalizer and Noise Suppressor can be applied independently to the channels, and after this, Reverb, Delay, or Chorus can also be applied.



☐ CHANNEL 1/2 EQUALIZER

The following are the Equalizer parameters, for both channels.

● Low EQ 1/2 (LOW EQ 1/2): - 12dB to +12dB

Adjusts the tone of the lower range.

● Middle Frequency 1/2 (MID FREQ 1/2):250Hz to 4kHz

Sets the center frequency that will be employed when adjusting the middle range.

124.	CHANNEL		i		1
MID	EQ	+	1	248	

● Middle EQ 1/2 (MID EQ 1/2): - 12dB to +12dB

Adjusts the tone of the middle range portion of the sound.

● High EQ 1/2 (HIGH EQ 1/2): - 12dB to +12dB

Adjusts the tone of the high range portion of the sound.

☐ CHANNEL 1/2 NOISE SUPPRESSOR

For each channel the following Noise Suppressor parameters are available.

124	CHANNEL	1
HS "	THRESHOLD	100

● Threshold 1/2 (THRESHOLD 1/2):0 to 100

This setting specifies the level at which the Noise Suppressor starts working. When the level of the signal falls below this level, it is muted.

124.CHANNEL 1 NS RELEASE 100

● Release 1/2 (RELEASE 1/2):0 to 100

This setting determines the amount of time it will take for sound volume to reach "0" after the Noise Suppressor has started working.

☐ CHANNEL 1/2 MASTER

For each channel, the level sent out by the Reverb, Delay, and Chorus can be adjusted with the following.

124.CHANNEL 1 REVERB LEVEL 100 ■ Reverb Level 1/2 (REVERB LEVEL 1/2):0 to 100

Adjusts level of Reverb output for each channel.

124.CHANNEL 1 DELAY LEVEL 100 ● Delay Level 1/2 (DELAY LEVEL 1/2):0 to 100

Adjusts level of Delay output for each channel.

124.CHANNEL 1 CHORUS LEVEL 100 ● Chorus Level 1/2 (CHORUS LEVEL 1/2):0 to 100

Adjusts level of Chorus output for each channel.

124.CHANNEL 1 PAN L=100 R= 0 Panpot 1/2 (PAN 1/2):L=0 to 100, R=0 to 100

Adjusts the positioning of the sound image for each channel.

124.CHANNEL 1 LEVEL 100 ● Level 1/2 (LEVEL 1/2):0 to 100

Adjusts the volume level for each channel.

☐ REVERB

Settings for Reverb are as follows.

124.REVERB REV TIME 20.0≤ ■ Reverb Time(REV TIME):0.1 to 20.0s

Adjusts the Reverb Time (P. 23).

124.REVERB PRE DELAY 200ms Pre Delay(PRE DELAY):0 to 200ms

Adjusts the Pre Delay (\$\infty\$ P. 23).

124.REVERB LP FILTER 12kHz ■ Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (= P. 24). When set at THRU, the Low-pass Filter is inactive.

124.REVERB LEVEL 100 ■ Reverb Level(LEVEL):0 to 100

Adjusts the volume of the Reverb sound.

☐ DELAY TAP

The Delay parameters are as follows.

124.DELAY TAP L D.TIME 1200ms Delay Tap L, Delay Time(D.TIME):0 to 1200ms

Adjusts the amount of delay for delayed sound output on channel L.

124.DELAY TAP L LEVEL 100 • Delay Tap L, Delay Level (LEVEL):0 to 100

Adjusts the volume of the delayed sound output on channel L.

124.DELAY TAP R D.TIME 1200ms ● Delay Tap R, Delay Time(D.TIME):0 to 1200ms

Adjusts the amount of delay for delayed sound output on channel R.

124.DELAY TAP R LEVEL 100 • Delay Tap R, Delay Level (LEVEL):0 to 100

Adjusts the volume of the delayed sound output on channel R.

124.DELAY TAP C D.TIME 1200ms Delay Tap C, Delay Time(D.TIME):0 to 1200ms

Adjusts the amount of delay for delayed sound output at the center (L+R) position.

124.DELAY TAP C FEEDBACK 100 • Delay Tap C, Feedback (FEEDBACK):0 to 100

Feedback refers to the process of feeding a portion of the delayed sounds back into the delay circuit. Here you set the amount that is to be fed back. This affects the number of repetitions occurring in the delay for both Delay L and R.

124.DELAY TAP C LEVEL 100 Delay Tap C, Delay Level (LEVEL):0 to 100

Adjusts the volume of the delayed sound output at the center position.

124.DELAY LP FILTER 12kHz ● Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (= P. 24). When set at THRU, the Low-pass Filter is inactive.

☐ SUPER CHORUS

The available Chorus parameters are as follows.

124.SUPER CHORUS PRE DELAY 60ms Pre Delay(PRE DELAY):0 to 60ms

After the direct sound has started, this is the amount of time it takes before the Chorus effect begins.

124.SUPER CHORUS RATE 100 ■ Rate(RATE):0 to 100

Adjusts the rate of the modulation for Chorus.

124.SUPER CHORUS DEPTH 100 Depth(DEPTH):0 to 100

Adjusts the modulation depth for Chorus.

☐ MASTER

Adjusts the overall volume.

124.MASTER LEVEL 100 Master Level(LEVEL):0 to 100

Adjusts the overall volume (Actual level output by the SE - 50).

5. Algorithms Suitable for Use With Mixers

Since the SE - 50 provides for stereo input, you can apply separate effects to the left and right channels. Such applications become effective when using a mixer having two or more Send/Return circuits.

OUTPUT MODE

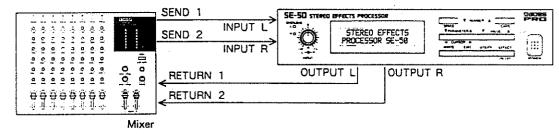
Algorithms No. 125 through No. 128 provide the parameter "Output Mode". They are used to select the mode of output for each channel.

MONO+MONO: The effected sound for individual channels is output in mono; separately on each channel.

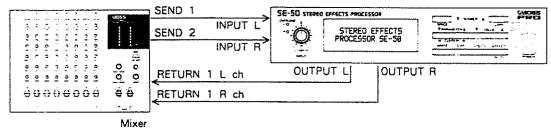
STEREO MIX: The effected sound for the channels is output in stereo, and is mixed when output.

Make connections as shown in one of the examples below, depending on the type of output selected.

(When the mode is MONO + MONO.)



(When the mode is STEREO MIX.)



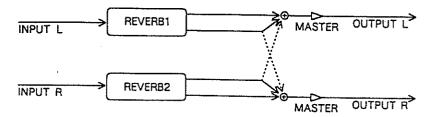
Select the Output Mode that is best for your setup.

25) REVERB1 + REVERB2 (No.125)

125 Rev1+Rev2 REVERB1+REVERB2

1

Allows you to apply Reverb separately for each channel.



☐ REVERB 1/2

The Reverb Parameters are as follows.

125.REVERB 1 REV TIME 20.0s Reverb Time(REV TIME):0.1 to 20.0s

Adjusts the Reverb Time (P. 23).

125.REVERB 1 PRE DELAY 200ms Pre Delay(PRE DELAY):0 to 200ms

Adjusts the Pre Delay (P. 23).

125.REVERB 1 HF DAMP 1.0 HF Damp(HF DAMP):0.1 to 1.0

Adjusts the decay of upper range reflections (HF Damp: = P. 24).

125.REVERB 1 LP FILTER 12kHz ■ Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (P. 24). When set at THRU, the Low-pass Filter is inactive.

125.REVERB 1 HP FILTER 1kHz High - pass Filter(HP FILTER):THRU, 30Hz to 1kHz

Controls the cut-off frequency of the High-pass Filter (\Rightarrow P. 24). When set at THRU, the High-pass Filter is inactive.

125.REVERB 1 LEVEL 100 Reverb Level(LEVEL):0 to 100

Adjusts the volume of the Reverb sound.

□ OUTPUT

Here, the Output Mode for the channels can be selected.

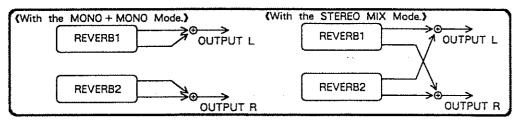
125.OUTPUT MODE MONO+MONO

• Mode(MODE):MONO+MONO, STEREO MIX

Selects the Output Mode.

MONO+MONO: The effected sound for individual channels is output in mono; separately on each channel.

STEREO MIX: The effected sound for the channels is output in stereo, and is mixed when output.



☐ DIRECT L/R

Controls the direct sound for each channel.

125.DIRECT LEVEL L 100 ● Direct Level L/R (LEVEL L/R):0 to 100

Adjusts the volume of direct sound, for each channel.

☐ MASTER L/R

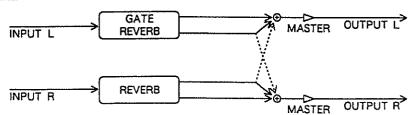
Controls overall volume for each channel.

125.MASTER LEVEL L 100 ● Master Level L/R (LEVEL L/R):0 to 100

Adjusts the overall volume for each channel (Actual level output from the SE - 50).

26) GATE REVERB + REVERB (No.126)

126.Gate Rev+Rev GATE REV.+REVERB Allows you to apply Gate Reverb and Reverb separately for each channel.



☐ GATE REVERB

The Gate Reverb Parameters are as follows.

126.GATE REVERB GATE TIME 200ms ● Gate Time(GATE TIME):0 to 200ms

Adjusts the Gate Time (P. 33).

126.GATE REVERB PRE DELAY 200ms Pre Delay(PRE DELAY):0 to 200ms

Adjusts the Pre Delay (P. 23).

126.GATE REVERB LP FILTER 12kHz ● Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (P. 24). When set at THRU, the Low-pass Filter is inactive.

126.GATE REVERB HP FILTER 1kHz High - pass Filter(HP FILTER): THRU, 30Hz to 1kHz

Controls the cut-off frequency of the High-pass Filter (P. 24). When set at THRU, the High-pass Filter is inactive.

126.GATE REVERB LEVEL 100 Gate Reverb Level(LEVRL):0 to 100

Adjust the volume of the Gate Reverb sound.

REVERB

Reverb Parameters .

126.REVERB REV TIME 20.0s Reverb Time(REV TIME):0.1 to 20.0s

Adjusts the Reverb Time (P. 23).

126.REVERB PRE DELAY 200ms Pre Delay(PRE DELAY):0 to 200ms

Adjusts the Pre Delay (\$\sim P. 23).

126.REVERB HF DAMP 1.0 HF Damp(HF DAMP):0.1 to 1.0

Adjusts the decay of upper range reflections (HF Damp: = P. 24).

126.REVERB LP FILTER 12kHz ● Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (\Rightarrow P. 24). When set at THRU, the Low-pass Filter is inactive.

126.REVERB HP FILTER 1kHz

• High - pass Filter(HP FILTER):THRU, 30Hz to 1kHz

Controls the cut-off frequency of the High-pass Filter (P. 24). When set at THRU, the High-pass Filter is inactive.

126.REVERB LEVEL 100

■ Reverb Level(LEVEL):0 to 100

Adjusts the volume of the Reverb sound.

□ OUTPUT

Here, the Output Mode for the channels is selected.

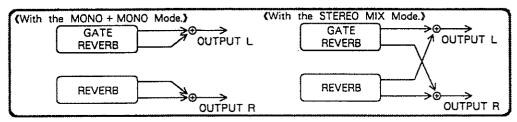
126.OUTPUT MODE STEREO MIX

Mode(MODE):MONO+MONO, STEREO MIX

Selects the Output Mode.

MONO+MONO: The effected sound for individual channels is output in mono; separately on each channel.

STEREO MIX: The effected sound for the channels is output in stereo, and is mixed when output.



☐ DIRECT L/R

Controls the direct sound for each channel.

126.DIRECT LEVEL L 100

● Direct Level L/R(LEVEL L/R):0 to 100

Adjusts the volume of direct sound, for each channel.

☐ MASTER L/R

Controls overall volume for each channel.

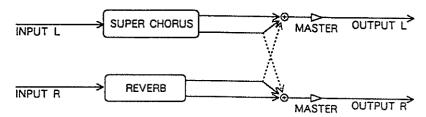
126.MASTER LEVEL L 100

● Master Level L/R(LEVEL L/R):0 to 100

Adjusts the overall volume for each channel. (Actual level output by the SE - 50.)

27) CHORUS + REVERB (No.127)

127 Chorus+Rev CHORUS + REVERB Allows you to apply Chorus and Reverb separately for each channel.



☐ SUPER CHORUS

The Chorus parameters are as follows.

127.SUPER CHORUS PRE DELAY 60ms Pre Delay(PRE DELAY):0 to 60ms

After the direct sound has started, this is the amount of time it takes before the Chorus effect begins.

127.SUPER CHORUS RATE 100 Rate(RATE):0 to 100

Adjusts the rate of the modulation for Chorus.

127.SUPER CHORUS DEPTH 100 Depth(DEPTH):0 to 100

Adjusts the modulation depth for Chorus.

127.SUPER CHORUS LEVEL 100 Chorus Level(LEVEL):0 to 100

Adjusts the volume of the Chorus sound.

□ REVERB

Settings for Reverb are as follows.

127.REVERB REV TIME 20.0s Reverb Time(REV TIME):0.1 to 20.0s

Adjusts the Reverb Time (\$\sim P\$, 23).

127.REVERB PRE DELAY 200ms Pre Delay(PRE DELAY):0 to 200ms

Adjusts the Pre Delay (P. 23).

127.REVERB HF DAMP 1.0 HF Damp(HF DAMP):0.1 to 1.0

Adjusts the decay of upper range reflections (HF Damp; at P. 24).

127,REVERE LOW EQ +12dB ● Low EQ(LOW EQ): - 12dB to +12dB

Adjusts the lower range portion of the reverb sound

127,REVERE HIGH EO +12dB ● High EQ(HIGH EQ): - 12dB to +12dB

Adjusts the upper range portion of the reverb sound

127.REVERB LP FILTER 12kHz ● Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut - off frequency of the Low - pass Filter (P. 24). When set at THRU, the Low - pass Filter is inactive.

127.REVERB HP FILTER 1kHz ◆ High - pass Filter(HP FILTER):THRU, 30Hz to 1kHz

Controls the cut - off frequency of the High - pass Filter (P. 24). When set at THRU, the High - pass Filter is inactive.

127.REVERB LEVEL 100 ● Reverb Level(LEVEL):0 to 100

Adjusts the volume of the Reverb sound.

□ OUTPUT

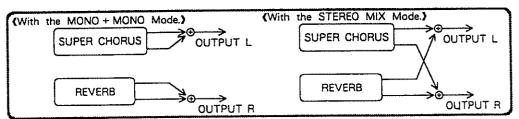
Here, the Output Mode for the channels is selected.

127.OUTPUT MODE STEREO MIX Mode(MODE):MONO+MONO, STEREO MIX

Select the Output Mode.

MONO+MONO: The effected sound for individual channels is output in mono; separately on each channel.

STEREO MIX: The effected sound for the two channels is output in stereo, and is mixed when output.



☐ DIRECT L/R

Controls the direct sound for each channel.

127.DIRECT LEVEL L 100 Direct Level L/R(LEVEL L/R):0 to 100

Adjusts the volume of the direct sound for each channel.

☐ MASTER L/R

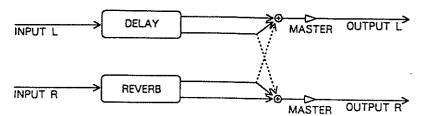
Controls the overall volume.

127.MASTER LEVEL L 100 ● Master Level L/R(LEVEL L/R):0 to 100

Adjusts the overall volume for each channel (Actual level output by the SE - 50).

28) DELAY + REVERB (No.128)

128 Delay+Reverb DELAY + REVER8 Allows you to apply Delay and Reverb separately for each channel.



☐ DELAY TAP

The Delay parameters are as follows.

128.DELAY TAP L D.TIME 800ms Delay Tap L, Delay Time(D.TIME):0 to 800ms
 Adjusts the amount of delay for delayed sound output on channel L.

128.DELAY TAP L LEVEL 100 • Delay Tap L, Delay Level (LEVEL):0 to 100

Adjusts the volume of the delayed sound output on channel L.

128.DELAY TAP R D.TIME 800ms ● Delay Tap R, Delay Time(D.TIME):0 to 800ms

Adjusts the amount of delay for delayed sound output on channel R.

128.DELAY TAP R LEVEL 100 Delay Tap R, Delay Level (LEVEL):0 to 100

Adjusts the volume of the delayed sound output on channel R.

128.DELAY TAP C D.TIME SØØms • Delay Tap C, Delay Time(D.TIME):0 to 800ms

Adjusts the amount of delay for delayed sound output at the center (L+R) position.

128.DELAY TAP C FEEDBACK 100 Delay Tap C, Feedback (FEEDBACK):0 to 100

Feedback refers to the process of feeding a portion of the delayed sounds back into the delay circuit. Here you set the amount that is to be fed back. This affects the number of repetitions occurring in the delay for both Delay L and R.

128.DELAY TAP C LEVEL 100 Delay Tap C, Delay Level (LEVEL):0 to 100

Adjusts the volume of the delayed sound output at the center position.

128.DELAY LP FILTER 12kHz Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (\Rightarrow P. 24). When set at THRU, the Low-pass Filter is inactive.

□ REVERB

Reverb Parameters.

128.REVERB REV TIME 20.0s Reverb Time(REV TIME):0.1 to 20.0s

Adjusts the Reverb Time (= P. 23).

128.REVERB PRE DELAY 200ms Pre Delay(PRE DELAY):0 to 200ms

Adjusts the Pre Delay (P. 23).

128.REVERB HF DAMP 1.0 HF Damp(HF DAMP):0.1 to 1.0

Adjusts the decay of upper range reflections (HF Damp: = P. 24).

128.REVERB LOW EQ +12dB ■ Low EQ(LOW EQ): - 12dB to +12dB

Adjusts the tone of the lower range portion of the reverb sound.

128.REVERB HIGH EQ +12dB ● High EQ(HIGH EQ): - 12dB to +12dB

Adjusts the upper range portion of the reverb sound.

128.REVERB LP FILTER 12kHz ■ Low - pass Filter(LP FILTER):500Hz to 12kHz, THRU

Controls the cut-off frequency of the Low-pass Filter (= P. 24). When set at THRU, the Low-pass Filter is inactive.

128.REVERB HP FILTER 1kHz ● High - pass Filter(HP FILTER):THRU, 30Hz to 1kHz

Controls the cut - off frequency of the High - pass Filter (P. 24). When set at THRU, the High - pass Filter is inactive.

128.REVERB LEVEL 100 ■ Reverb Level(LEVEL):0 to 100

Adjusts the volume of the Reverb sound.

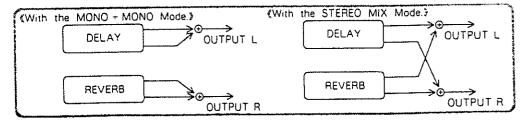
The Output Mode for the channels can be selected.

128.OUTPUT MODE STEREO MIX Mode(MODE):MONO+MONO, STEREO MIX

Selects the Output Mode.

MONO+MONO: The effected sound for individual channels is output in mono; separately on each channel.

STEREO MIX: The effected sound for the two channels is output in stereo, and is mixed when output.



□ DIRECT L/R Controls the direct sound for each channel.

128.DIRECT
LEUEL L 100 Adjusts volume of direct sound for each channel.

□ MASTER L/R Controls overall volume for each channel.

128.MASTER LEVEL L 100 ● Master Level L/R(LEVEL L/R):0 to 100

Adjusts the overall volume for each channel (Actual level output by the SE - 50).

SECTION II

(USING MIDI)

Since the SE - 50 is equipped with MIDI connectors, it can readily be used to exchange data with external MIDI units. Using this feature, you can select Program Numbers from the panel of the external device, or store sound data from the SE - 50 in another unit.

1 ABOUT MIDI

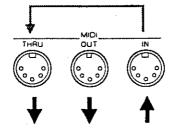
MIDI stands for "Musical Instrument Digital Interface". It is an international standard that allows for data such as that representing the music played, or for changes in sounds used, to be exchanged among various different instruments. As long they are MIDI compatible, all devices, regardless of differences in model or manufacturer, can exchange whatever performance data they are both equipped to understand. MIDI converts every event occurring while an instrument is played into MIDI data. When received by another instrument, this stream of MIDI data can be used to play it, much like it itself were being played.

The Exchange of MIDI Data

The exchange of MIDI data is carried out as explained in the following.

☐ About MIDI Connectors

In carrying out the exchange of MIDI data, the 3 types of connectors shown below are used. MIDI cables are connected to these connectors in various ways depending on the method they are to be used.



MIDI IN :Receives data from another MIDI device.

MIDI OUT :Transmits data originating in the unit.

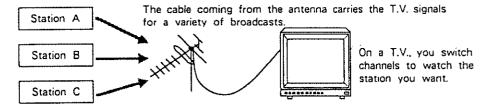
MIDI THRU:Sends out an exact copy of the data received at MIDI IN.

- * In theory, any number of MIDI devices could be connected together using MIDI THRU connectors; but it is best to consider 4 to 5 devices as being the practical limit. This is because the further down the line a device is located, the more delay there is that could occur, and the chance of error due to deterioration in signal quality increases.
- * The SE 50 is equipped only with MIDI IN and MIDI OUT connectors.

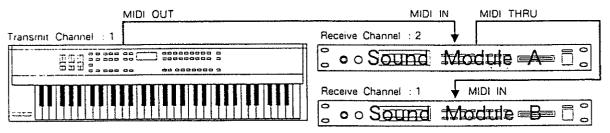
☐ MIDI Channels

With MIDI, a single cable can be used for carrying differing sets of performance information, for a number of MIDI devices. This is possible thanks to the concept of a MIDI channel.

MIDI channels are in some ways similar to the channels on a television set. On a T.V., a variety of programs broadcast from different stations can be viewed by switching channels. This is because the information on any particular channel is conveyed only when the receiver is set to the same channel that is being used for transmission.



The channels available with MIDI range from 1 through 16. When a musical instrument (the receiver) is set so its channel matches the MIDI channel used by the transmitting device, the MIDI data is conveyed. When the MIDI channels are set as illustrated below, and you play the keyboard, sound will be produced by only sound module B.



OMNI Mode

When set to OMNI On, MIDI data arriving on all channels can be received, regardless of any setting for a particular receive channel. The OMNI Off mode is used when wishing to receive data on a specifically chosen channel.

2. MIDI Messages Recognized by the SE-50

In order to convey the great variety of expression possible with music, MIDI has been provided with a large range of data types (messages). MIDI messages can be divided into two main types: Messages that are handled on each channel (Channel messages); and messages that are handled independently of channels (System messages).

Messages Handled for Each MIDI Channel (Channel Messages)

These messages are used to convey the events of a performance. In most circumstances, they alone are sufficient for providing the necessary control. The specific results obtained by the various types of MIDI message are determined by the settings on the sound source receiving them.

Aftertouch Messages These messages convey Aftertouch, the information about the pressure applied to a key. There are two types of Aftertouch, Channel and Polyphonic.

Channel Aftertouch provides control based on each MIDI channel. No matter which key it is that is pressed most firmly, the effect is applied equally to all notes on the same MIDI channel.

Polyphonic Aftertouch provides control on an individual key (note) basis. Even though it may share the same MIDI channel with other notes, any particular key that has more pressure put on it will produce a unique effect.

The SE - 50 responds to Channel Aftertouch messages, which can be assigned to control a selected parameter.

☐ Pitch Bender Messages

Messages which convey the action of the Bender Lever (pitch).

On the SE - 50, Pitch Bend messages can be used to control a selected parameter.

Program Change Messages

These messages are used for conveying information about changes to another sound. Sounds are changed using Program Change Numbers, numbered from 1 through 128. The Program Numbers on the SE - 50 correspond with MIDI Program Change Numbers.

Control Change Messages

These messages are used to enhance the expressiveness of a performance. Each function is identified by a Control Number. The functions which are available for control will vary depending on the instrument. On the SE - 50, Control Change messages can be assigned to control selected parameters.

☐ Exclusive Messages

Exclusive Messages handle information such as that related to a device's own unique sounds. Generally, such messages can be exchanged only between devices of the same model and by the same manufacturer.

Exclusive Messages can be employed to save the settings for Effects Programs into a sequencer, or for transferring such data to another SE - 50

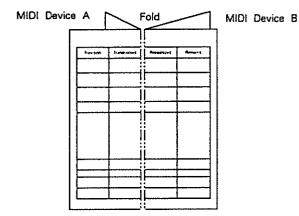
Whenever Exclusive messages are to be used for communication, both devices need to be set to the same Unit Number. On the SE 50 the Unit Number is equivalent to the MIDI Channel number

MIDI Implimentation Chart

MIDI has made it possible for a wide range of musical instruments to communicate with each other, but that doesn't mean that the many types of data will all be understood.

The only communication possible between connected MIDI devices deals with data that both of the units understand.

It is for this reason that every owner's manual, for all kinds of MIDI devices, always includes a MIDI Implementation Chart, as a quick reference to the types of MIDI messages it is capable of handling. You should compare the MIDI Implementation Charts for any two devices in order to find out which types of data can be communicated between them. Since the size of these charts is standardized, you can place them so they overlap. This way you can more easily compare the receiving device with the transmitting device.



*For detailed information on how MIDI data is handled on this unit, refer to "Roland Exclusive Messages" (\$\sigma\$ P. 117), and "MIDI Implementation" (\$\sigma\$ P. 121).

2 MIDI SETTING

Applications made possible when the SE - 50 is connected with other MIDI - equipped units are explained in the following.

O Changes in the Program Number

Using Program Change messages, Program Numbers on the SE - 50 can be changed using the controls on an external unit. For example, you could get the Effects Programs on the SE - 50 changed at the instant you change the timbre on a keyboard. For such setups the unit provides the convenient feature of allowing you to have MIDI Program Change Numbers and Program Numbers on the SE - 50 correspond in whatever way you need them to. Thanks to the SE - 50's Program Change Map feature, you can easily arrange the desired correspondence.

O Controlling Parameters Using an External Unit

Aftertouch, Pitch Bend, and Control Change messages can be used to control the Effector parameters.

O Saving Data onto an External Device

Using Exclusive messages, SE - 50 sound data can be stored in external devices, such as a sequencer.

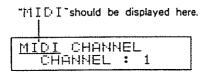
* Whenever MIDI is used, you need to make sure that you have the MIDI channels set properly, or you won't obtain reliable communication between the units. The MIDI channel on the SE - 50 should be matched with the channel used by the external unit.

1. Setting the MIDI Channel and OMNI Mode

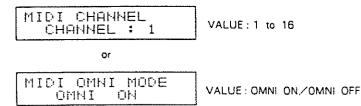
Follow the steps below to set the channel used for MIDI reception/transmission. When shipped, the unit was set with the MIDI Channel at "1" and OMNI Mode at "On". If left at these settings, it will receive data arriving on any channel, but will transmit on channel 1.

1 Press UTILITY enough times to select the MIDI setting mode.

The indicator on the button will light.



2 Press PARAMETER until you have the CHANNEL or OMNI MODE setting pages.



- ③ Using VALUE ▲ ▼ set the MIDI Channel or OMNI Mode.
- When completed, either press EXIT, or press UTILITY until the button's indicator has gone out, and you have returned to where you were originally.

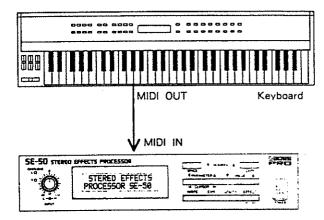
2. Changing Program Numbers

Through the use of Program Change messages, generated by another external MIDI unit, you can obtain changes in the SE - 50 Program Numbers.

* Please refer to the manual that came with your other unit for details on how it handles Program Change Numbers.

☐ Using Another Unit to Remotely Change SE-50 Program Numbers

Connections should be made as follows:



As shipped from the factory, this unit is set to respond to MIDI Program Changes by switching to the Program which has exactly the same number as the message which was sent.

So, if for example you change to a different sound on your keyboard, and as a result it sends Program Change Number 45 over MIDI, the SE - 50 will switch to its No. 45. Program Number.

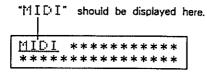
Correspondence Between Sounds and Effects Programs

The SE - 50 allows you to alter its "Program Change Map", which is information that sets up the correspondence that is used between Program Change Numbers and their counterpart. Program Numbers, on the SE - 50.

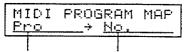
The following steps allow you to alter the Program Change Map.

Press UTILITY enough times to select the MIDI setting mode.

The indicator on the button will light.



2 Press PARAMETER until you have the MIDI PROGRAM MAP setting page.



No. of received Program SE-50 Program Number Change Number

- 3 Using NUMBER ★ ▼ set the value of a received Program Change Number, and using VALUE ★ ▼ set the SE 50 Program Number that will correspond to it.
- 4 When complete, press EXIT to return to the performance screen.

3. MIDI CONTROL

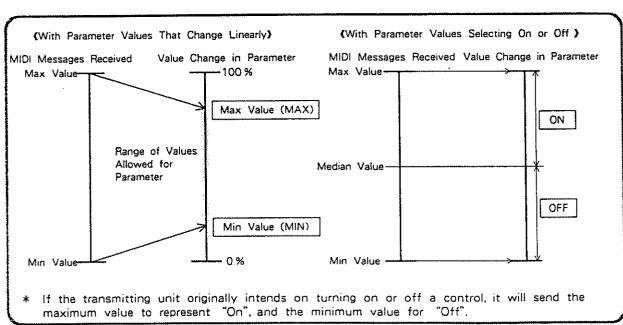
Parameters for Effects Programs on the SE - 50 can be set so they will respond to certain messages such as Aftertouch and Pitch Bend that arrive from an external device, and be controlled in real - time during performance.

For example, you could have the amount of pressure applied to keyboard keys (Aftertouch) directly alter the volume produced by the SE - 50; or the same pressure information could also be used to alter the timbre provided by the Effects Program. Your choices as to how such controls will be performed can be stored individually along with each Program Number.

Types of MIDI Data That Provide Control You can select one type of MIDI message that you wish to be used as a control. The ones available are: Aftertouch, Pitch Bend, and Control Change (Control Numbers 0 to 31 and 64 to 95) messages. After selecting the type of message, you then need to specify what it will do on the SE - 50 when received, that is, which parameter it will alter. The available parameters will differ depending on the algorithm.

Fine Tuning the Control

In order to obtain exactly the changes you require, you can also choose the range within which parameter values can change in response to the MIDI message. This setting is made by specifying a minimum and maximum value. For example, if you want a certain MIDI message to control MASTER LEVEL, but only within an overall range of 50 to 100, you would set the MIN value at 50 and the MAX value at 100. For certain parameters, however, the control you need would involve simply turning them on or off. In these cases, if the value of the message received is greater than the median value, it is turned on. If less, it is turned off.



* The same as with parameter settings for Effects Programs, settings made for MIDI Control are volatile, that is, they will be lost once power is turned off, or when a change to a different Program Number is made.

To keep your settings, perform the Write procedure (or P. 20) once you have finished making them.

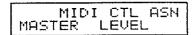
At the factory defaults, MIDI Control is disabled for every Program Number. To take advantage of MIDI Controls, perform the procedure below.

- ① Using NUMBER ▲ ▼, select the Program Number for which you wish to make a MIDI Control setting.
- ② Using PARAMETER ▲ ▼, select the parameter shown below. Then using VALUE ▲ ▼ select the type of MIDI messages you are going to receive.

MIDI CONTROL ' RECEIVE OFF

VALUE:OFF (Reception Disable)
AF TOUCH (Aftertouch)
P.BEND (Pitch Bender)
0 to 31 / 64 to 95
(Control Change Number)

③ Using PARAMETER ▲ ▼, select the parameter shown below. Then using VALUE ▲ ▼ select the parameter you are going to manipulate.



VALUE: The available Parameter differ depending on the individual algorithm.

- Once a parameter has been selected here, it will not act in altering the sound if you make changes in it using the normal panel operations for setting changes.
- Using PARAMETER , select the parameter shown below. Then using VALUE set the range within which value changes will be valid (minimum and maximum values).

(Min. Value) MIDI CTL MIN

(Max. Value) MIDI CTL MAX

VALUE :Each parameter has its own possible minimum.

VALUE :Each parameter has its own possible maximum.

If you wish, you can also set a MIN value that is higher than the MAX value; in this case you obtain changes in a reversed direction.

- - * If you change the parameter that is to be controlled after the setting for MIN and MAX values have been set, you may find that these MIN and MAX values will have been replaced by other values. To avoid this, always reset MIN and MAX values each time you select a new control parameter.

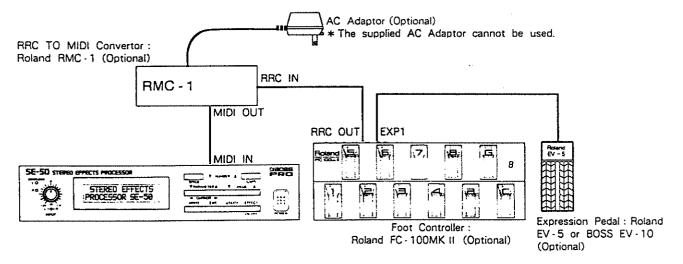
4. Using a Foot Controller (FC-100MK II)

Pedal control over the operations explained below is made possible once you connect an FC - 100MK II foot controller (optional), or the like.

- OThe foot controller can be used to specify Program Change Numbers, which select Program Numbers on the SE 50.
- OThe control pedal on the foot controller (or an expression pedal connected to it) can be used to control specified parameters (MIDI Control).

☐ Connection and Setup of a Foot Controller

Connections should be made as shown below.



- ☐ Set the FC 100MK II to the MIDI Foot Pedal mode, and set MIDI Mix at "Off".
- * Refer to the manual that came with your FC 100MK II for instructions on how to do this.
- \square Set the FC 100MK II and SE 50 so their MIDI Channels are matched.
- * Refer to P. 95 , and the FC 100MK $\scriptstyle\rm II$ Owner's Manual for instructions on how to do this.

5. Receiving and Sending Data Over MIDI

Using MIDI Exclusive messages, you can send data containing the settings for the Effects Programs to a sequencer for storage; or remotely make changes in an Effects Program at a specified Program Number, using an external MIDI device.

On the SE - 50, the transmission of Exclusive messages is carried out on a MIDI channel.

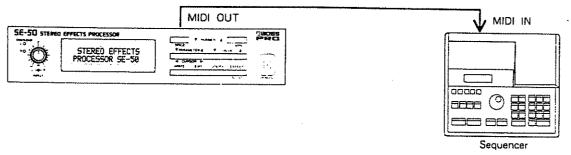
The types of Bulk Data (data which is transmitted using Exclusive messages) which can be transmitted are as appears below. Before the transmission you can specify, in terms of start and stop points, a range to be sent.

Displayed	Content of Transmission
SYSTEM	O Program Change Map O Range of Program Numbers selectable with a foot switch.
No.1	OSetting for Program Number 1
No.2	O Setting for Program Number 2
:	<u> </u>
No.99	O Setting for Program Number 99
No.100	OSetting for Program Number 100

1) Making the Connections

☐ Saving SE-50 Data to a Sequencer

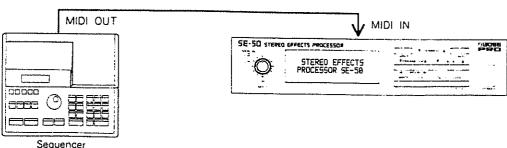
Connect the units as shown below. After setting your sequencer so it is ready to receive Bulk Data, start the transmission on the SE - 50.



^{*} Refer to your sequencer manual for instructions on how to do this.

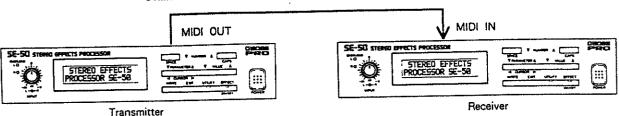
Sending Data That Was Saved in a Sequencer Back to the SE-50

Connect the units as shown below. The SE - 50 needs to be set to the same MIDI Channel that was used when the data was originally saved to the sequencer. Next, after setting the SE - 50 so it is ready to receive Bulk Data, start the transmission from the sequencer.



☐ Sending a Copy of Data to Another SE-50

Connect the units as shown below.



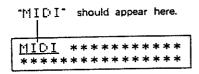
Have the MIDI Channel on both units set so they match. Next, set the receiver so it is ready to receive Bulk Data. (To the Bulk Load mode.)

*Once the receiving SE - 50 is ready to receive exclusive messages, get the transmitter to start sending. To set the unit to the reception mode, refer to "3 Data Reception", P. 103.

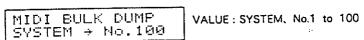
2) Data Transmission (Bulk Dump)

1 Press UTILITY until you have the mode used to make MIDI settings.

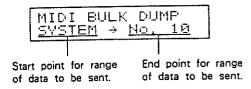
The button's indicator will light.



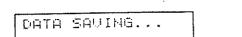
② Press PARAMETER ▲ ▼ until you have the page for setting Bulk Dump.



3 Select the range of data that is to be sent. Use NUMBER ▲ ▼ to set the starting point, and VALUE ▲ ▼ to set the end point.



Press WRITE, and the data transmission will begin.
While the data is being sent, the display will appear as below:

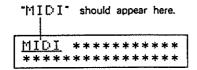


After the transfer has been completed, you are returned to the page you were in at step ③

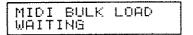
Press EXIT to return to the performance screen.

3) Data Reception (Bulk Load)

1 Press UTILITY until you have the mode used to make MIDI settings.
The button's indicator will light.



2 Press PARAMETER until you have the page for Bulk Load.



(Ready to receive condition.)

3 Have the transmitter start sending.

MIDI BULK LOAD DATA RECEIVING

(Condition where data is actually being received.)

Once the reception has been completed, the display will then change and show the page below.

MIDI BULK LOAD IDLING...

(Reception has finished.)

When at this condition, you can continue and receive other blocks of Bulk Data if you wish.

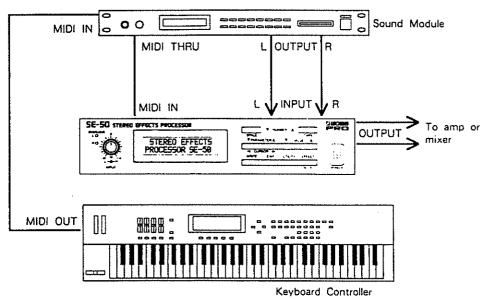
- ① Once the process has been completed, press EXIT to return to the performance screen.
 - * Whenever you wish to receive Bulk Data using Exclusive messages, you must always have the MIDI Channel set to the same channel as the other unit. If the channels don't match, the reception cannot be carried out even though you are set to OMNI On.

3 Getting the Most From Your SE-50

By combining the SE - 50 with a range of other equipment, you will be able to enjoy a number of other features that can enhance your musical capabilities. Several examples are provided as suggestions in the following.

Setup Using a Keyboard Controller and Sound Module

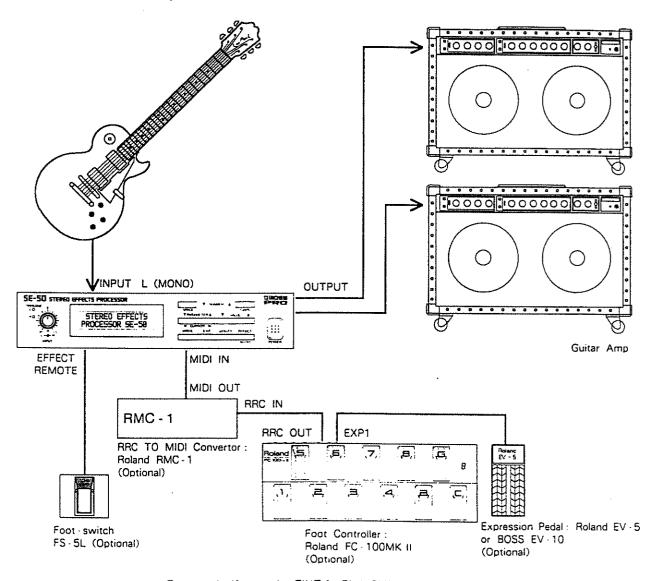
When connections are made as shown in the illustration below, you can change to a different patch on the keyboard, and simultaneously, the patch on the sound module, and the Program Number on the SE - 50 will automatically be changed as well. Moreover, you can control the parameter on the SE - 50 by using the MIDI Control of a Keyboard Controller.



- Set the keyboard controller, sound module, and SE 50 so they are all using the same MIDI channel (\$\sigma\$ P. 95).
- The received MIDI message for the SE 50 parameter (= P. 99) needs to be matched with the number used by the particular control you are going to use on the keyboard.

2) Setup Using a Guitar

When connections are made as shown in the illustration below, you can change Program Numbers using the Foot Controller, and use the Expression Pedal or Control Pedal to alter parameters in the SE - 50.



For example, if you assign FINE for Pitch Shifter to the expression pedal, you will be able to alter the pitch of the guitar with the pedal.

Set the FC - 100MK [] to the MIDI Foot Pedal mode, and set MIDI Mix at "Off".

* When in the Foot Pedal mode, the factory default Control Number assignments for the FC - 100MK [] are as follows:

Control Pedal (MODE I: Latch): 65

Control Pedal (MODE II: Unlatch): 64

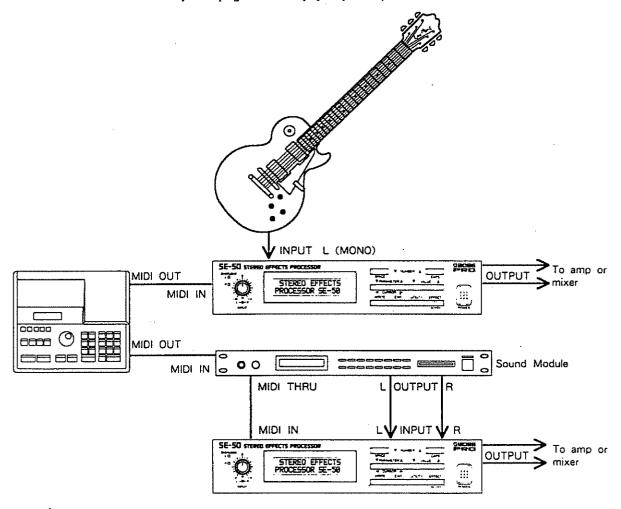
EXP1: 07

EXP2: 01

Using the above information for reference, make the settings for MIDI Control on the SE - 50 (ser P. 98).

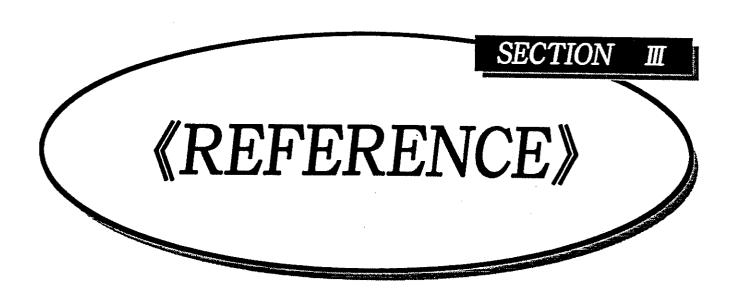
3) Combining a Sequencer

When connections are made as shown in the illustration below, the Program Numbers will be changed automatically in keeping with what is played by the sequencer.



^{*} Please refer to your equipment manuals for further information, if needed.

These are only a few examples that you could try. You will probably be able to think of other setups that are more suited to your particular needs.



Factory Preset Setting

1. About Factory Preset Settings

1) System Data

MIDI Transmit/Receive Channel: Channel 1

OMNI Mode: On

Program Change Map: Direct numerical correspondence

Range of Program Numbers Selectable with Foot - switch: 1 to 128

Effect Off Mode: DIRECT

* When shipped, the unit is not set to allow external units to employ MIDI Control.

2) Preset Data

For details of the settings for each Program Number when set to Factory Presets, refer to "The List of Preset Name" ($rac{r}{c}$ P.114).

2. Restoring the Factory Presets (Initializing the Data)

This procedure allows you to restore the contents of User Numbers and System Data to the settings made when the unit left the factory. You can specify a specific range for this, and initialize only the Program Numbers (or System Data) that you need.

To restore the SE - 50 to the Factory Presets, follow the steps below. You can either initialize all settings, or only certain ones that you select.

- 1 Turn power OFF.
- While holding down both the PARAMETER and VALUE buttons, turn power ON.

Once on, the following page appears in the display:

Factory Preset Y:Write N:Exit

3 Press WRITE

Factory Preset SYSTEM + No.100

- Should you wish to cancel the initialization, press EXIT. Thereafter, the unit will enter the normal startup mode.
- Specify the desired range that is to be initialized. Set the starting point using NUMBER
 ▲▼, and the end point using VALUE ▼.

Factory Preset SYSTEM + No. 10 Ex This will cause initialization of the System Data and Program Nos. 1 to 10.

The types of data which can be initialized are as follows:

Displayed	Settings Which Can Be Initialized.
SYSTEM	O MIDI Transmit / Receive Channel O MNI Mode O Program Change Map O Range of Program Numbers Selectable With Foot-switch O Effect Off Mode
No.1	OSettings for Program Number 1
No.2	OSettings for Program Number 2
No.99	OSettings for Program Number 99
No.100	O Settings for Program Number 100

⁽⁵⁾ Press WRITE, and the initialization takes place.

Once the initialization has been completed, you are returned to the normal startup mode.

TROUBLESHOOTING

If for some reason you do not hear the sound you expect to, or suspect that something is wrong with the way the unit is operating, first check through the list that follows. If the problem still persists, consult with the retailer where the unit was purchased, or contact the nearest Roland Service Station.

No Sound Produced/Level Is Too Low.

- Have you checked for damaged cables?Replace any damaged cables.
- Are connections with external devices properly made?
 Check to make sure all connections are in order.
- Is the volume set too low?Check the volume on the amplifier and/or mixer you are using.
- ◆ Are the Input Level knobs on the SE 50 at an appropriate setting?
 Check, then reposition them if necessary.
 → "3. Adjusting the Input Level" (\$\sigma\$ P. 12)
- ◆ Are you certain the settings at the Program Number are suitable?
 Check to make sure the parameter settings, such as those for "LEVEL", are not set too low.
- Do you have "MASTER LEVEL" set to be used as a MIDI Control?

 If so, have your external MIDI device send the appropriate Control Change messages.
- Do you have "MUTE" set for the Effect Off Mode?
 If set at "MUTE" there will be no sound produced whenever the effect is off.
 → "□ Settings for the Effect Off Mode" (⇒ P. 15)

Overload Indicator Lights Too Frequently During Input.

- ◆ Have the "INPUT Level Knobs" been adjusted properly?
 Adjust the INPUT Level Knobs so you have a more appropriate setting.
 → "3. Adjusting the Input Level" (= P. 12)
- Do you have the "LEVEL Switch" on the rear panel set to the suitable position? Set the Level Switch to the "+4 dBm" position.
- Is the level being output by another unit you have connected too high?
 Adjust the output level on the external unit to a lower level.

The Program Number Won't Change When a NUMBER Button Is Pressed.

- Are you in a mode where settings for parameters are made? If so, press EXIT
- Is the indicator on the UTILITY button lit?

 If so, press EXIT

Sound Doesn't Change Even Though Setting Is Changed Using the VALUE Buttons.

lacktriangle Do you have the parameter in question assigned to be used as a MiDi Control?

The VALUE buttons cannot be used to change the value for a parameter which has been set as a MIDI Control; in this case the unit only responds to MIDI messages.

→ "3. MIDI Control" (P. 98)

The EFFECT Button Won't Turn Effects On/Off.

- Do you have a foot switch connected to the EFFECT REMOTE jack on the rear panel? While a foot switch connected to the EFFECT REMOTE jack is "Off", the EFFECT Button cannot be used to turn effects On or Off.
- → " Setting the Effects Off Mode" (P. 15)

Writing to Memory Unsuccessful When WRITE Button Is Pressed.

● Is the indicator on the UTILITY button lit? If so, press EXIT.

Program Numbers Won't Change When Pedal Connected To "NUMBER SHIFT" Jack Is Depressed. • Are you in a mode where settings for parameters are made?

If so, press EXIT.

Is it possible that you have the Min. and Max. values for the allowed range of change set to the same Program Number?

Check the setting that you have for the range of change for Number Shift.

→ " Setting the Range of Pedal Changes in Program Number" (→ P. 14)

MIDI Data Is Not Received.

Are you sure your cables are not damaged?

Replace cables if necessary.

• Are you connected properly with the external MIDI device?

Check your connections again.

Do you have the MIDI Channel matched with that of the connected unit?

Check the MIDI Channel.

→ "1. Setting the MIDI Channel and OMNI Mode" (=> P. 95)

Program Change Messages Aren't Received.

• Are you in a mode where settings for parameters are made?

If so, press EXIT.

Is the indicator on the UTILITY button lit?

If so, press EXIT .

Using MIDI Control Doesn't Provide the Desired Control.

● Is MIDI Control Receive set at "OFF"?

Check the setting for MIDI Control Receive.

- → "3. MIDI Control" (P. 98)
- Is the effector which is to be controlled using MIDI set to "OFF"?

 Check the On/Off status of the effector which you wish to control using MIDI.
- → "3. Altering an Effects Program" (P. 19)
- Do you have the connected unit and MIDI Control Receive (Aftertouch and Pitch Bend messages, and Control Number) set so they correspond?

Check the data transmitted and the data to be received.

- Do you possibly have the Min, and Max. values for MIDI Control set too closely together? Recheck the values you have for Min. and Max. for MIDI Control.
- → "3. MIDI Control" (= P. 98)

The List of Algorithm

Depending on the particular algorithm, the Sampling Frequency used by the SE - 50 differs.

Algorithm Number	Algorithm Name	Effect Name	Sampling Frequency (kHz)
1	HALL 1	REVER8	32
2	HALL 2	REVERB	32
3	ROOM	REVERB	32
4	PLATE	REVERB	32
- 5	AMBIENCE	AMBIENCE	32
6	GATE REVERB	GATE REVERB	32
7	STEREO REVERB	REVERB	32
8	MULTI DELAY	DELAY × 5	32
9	MULTI TAP DELAY	TAP DELAY × 5	32
10	STEREO DELAY	STEREO DELAY	48
11	SPACE CHORUS*	SPACE CHORUS	48
12	PITCH SHIFTER.	PITCH SHIFTER × 4	32
13	ST. PITCH SHIFTER*	STEREO PITCH SHIFTER	48
14	STEREO FLANGER*	FLANGER + GATE .	48
15	STEREO PHASER*	PHASER	48
16	VOCODER	VOCODER + CHO + NS	32
17	ROTARY*	ROTARY + NS	32
18	KEYBOARD 1*	EQ + DLY, + CHO + REV	48
19	KEYBOARD 2	PH + EQ + CHO + REV	32
20	RHODES*	EQ + PH + NS + DLY + CHO + PAN + REV	32
21	GUITAR MULTI*	COMP + OD/DS + EQ + NS + DLY + CHO + REV + LD	32
22	VOCAL MULTI*	LM + EH + NS + DLY + CHO + REV	32
23	STEREO ENHANCER	LM + EH + NS	48
24	2CH MIXER	EQ + NS + REY/DLY/CHO	32
25	REVERB 1 + REVERB 2	REVERB + REVERB	32
26	GATE REVERB + REVERB	GATE REVERB + REVERB	32
27	CHORUS + REVERB	CHORUS + REVERB	32
28	DELAY + REVERB	DELAY + REVERB	32

 E0:EQUALIZER
 DLY:DELAY
 CHO:CHORUS

 REV:REVERB
 PH:PHASER
 MS:NOISE SUPPRESSOR

 PAN:PANNING
 COMP:COMPRESSOR
 OD/DS:0VERDRIVE/DISTORTION

 LD:LINE DRIVER
 LM:LIMITER
 EH:ENHANCER

The asterisk (*) indicates those algorithm whose parameter value can be controlled by MIDI message (MIDI Control).

* As a result of a change in the Sampling Frequency, the Frequency Response changes as follows:

At the 48kHz sampling frequency: 20Hz to 20kHz (% dB) At the 32kHz sampling frequency: 20Hz to 15kHz (% dB)

The Tabel of Preset Name

NUMBER	NAME	Algo.	NUMBER	NAME	Algo.	NUMBER	NAME	Algo.
No.1	Hall 1	1	No.44	Bright Gate	6	No.87	Metal	21
No.2	Hall 2	2	No.45	Reverse Gate	6	No.88	Clean	21
No.3	Room	3	No.46	Panning Gate	6	No.89	Lead 1	21
No.4	Plate	4	No.47	St. REV. 1	7	No.90	Modulate GT.	21
No.5	Ambience	5	No.48	St. REV. 2	7	No.91	Fuzz	21
No.6	Gate Reverb	6	No.49	St. REV. 3	7	No.92	Jazz	21
No.7	St. Reverb	7	No.50	St. REV. 4	7	No.93	Pitch Guitar	21
No.8	Multi Delay	8	No.51	Pan Delay	8	No.94	Metal Flange	21
No.9	Tap Delay	9	No.52	CRES. Delay	8	No.95	Lead 2	21
No.10	Stereo Delay	10	No.53	Pingpong DL.	8	No.96	Ballade VC.	22
No.11	Space Chorus	11	No.54	Overdub Echo	9	No.97	Short Vocal	22
No.12	Pitch Shifter	12	No.55	Analog Delay	9	No.98	Slap Bass	22
No.13	St. P. Shifter	13	No.56	Short Delay	9	No.99	Mellow Bass	22
No.14	St. Flanger	14	No.57	Cross Delay	10	No.100	AC.Guitar	22
No.15	St. Phaser	15	No.58	Long Delay	10	No.101	Hall 1	1
No.16	Vocoder	16	No.59	Space CHO 1	11	No.102	Hall 2	2
No.17	. Rotary	17	No.60	Space CHO 2	11	No.103	Room	3
No.18	Keyboard 1	18	No.61	Space CHO 3	11	No.104	Plate	4
No.19	Keyboard 2	19	No.62	Space CHO 4	11	No.105	Ambience	5
No.20	Rhodes	20	No.63	Detune	12	No.106	Gate Reverb	6
No.21	Guitar Multi	21	No.64	Octave Down	12	No.107	St. Reverb	7
No.22	Vocal Multi	22	No.65	Octave Up	12	No.108	Multi Delay	8
No.23	St. Enhancer	23	No.66	Diminish	12	No.109	Tap Delay	9
No.24	2ch Mixer	24	No.67	Octave Echo	12	No.110	Stereo Delay	10
No.25	Rev1 + Rev2	25	No.68	St. P. Shift 1	13	No.111	Space Chorus	11
No.26	Gate Rev + Rev	26	No.69	St. P. Shift 2	13	No.112	Pitch Shifter	12
No.27	Chorus + Rev	27	No.70	St. Flanger 1	14	No.113	St. P. Shifter	13
No.28	Delay + Reverb	28	No.71	St. Flanger 2	14	No.114	St. Flanger	14
No.29	Mid Hall	1	No.72	Gate Flanger	14	No.115	St. Phaser	15
No.30	Large Hall	1	No.73	St. Phaser 1	15	No.116	Vocoder	16
No.31	Dark Hall	1	No.74	St. Phaser 2	15	No.117	Rotary	17
No.32	Bright Hall	2	No.75	St. Phaser 3	15	No.118	Keyboard 1	18
No.33	Cathedral	2	No.76	Rotary Fast	17	No.119	Keyboard 2	19
No.34	Live House	3	No.77	Rotary Slow	17	No.120	Rhodes	20
No.35	Dead Room	3	No.78	Rotary Drive	17	No.121	Guitar Multi	21
No.36	Brass Reverb	3	No.79	Synth. Solo	18	No.122	Vocal Multi	22
No.37	Vocal Reverb	4	No.80	Super Phaser	19	No.123	St. Enhancer	23
No.38	Drum Reverb	4	No.81	Step Phaser	19	No.124		24
No.39	Ambience 1	5	No.82	Rhodes 1	20	No.125		25
No.40	Ambience 2	5	No.83	Rhodes 2	20	No.126	Gate Rev + Rev	26
No.41	Ambience 3	5	No.84	Vib	20	No.127	Chorus + Rev	27
No.42	Normal Gate	6	No.85	Tube Stack	21	No.128	Delay + Reverb	28
No.43	Dark Gate	6	No.86	Rhythm	21			

BLANK CHART

NAMING SHEET

NUMBER	NAME	Algo.	NUMBER	NAME	Algo.	NUMBER	NAME	Algo.
No.1			No.44	•	1	No.87		
No.2			No.45			No.88		
No.3			No.46			No.89		
No.4			No.47			No.90		
No.5			No.48			No.91		
No.6			No.49			No.92		
No.7	,- e		No.50			No.93		
No.8			No.51	•		No.94		
No.9			No.52			No.95		
No.10			No.53	-		No.96		
No.11			No.54			No.97		
No.12			No.55			No.98		
No.13			No.56			No.99		
No.14			No.57			No.100		
No.15			No.58			No.101	Hali 1	1
No.16			No.59			No.102	Hall 2	2
No.17			No.60			No.103	Room	3
No.18			No.61			No.104	Plate	4
No.19			No.62			No.105	Ambience	5
No.20			No.63			No.106	Gate Reverb	6
No.21			No.64			No.107	St. Reverb	7
No.22			No.65			No.108	Multi Delay	8
No.23			No.66			No.109	Tap Delay	9
No.24			No.67			No.110	Stereo Delay	10
No.25			No.68			No.111	Space Chorus	11
No.26			No.69			No.112	Pitch Shifter	12
No.27		. -	No.70			No.113	St. P. Shifter	13
No.28			No.71			No.114	St. Flanger	14
No.29			No.72			No.115	St. Phaser	15
No.30			No.73			No.116	Vocoder	16
No.31			No.74			No.117	Rotary	17
No.32			No.75			No.118	Keyboard 1	18
No.33			No.76			No.119	Keyboard 2	19
No.34			No.77			No.120	Rhodes	20
No.35			No.78			No.121	Guitar Multi	21
No.36			No.79			No.122	Vocal Multi	22
No.37			No.80			No.123	St. Enhancer	23
No.38			No.81			No.124	2ch Mixer	24
No.39			No.82			No.125	Rev1 + Rev2	25
No.40			No.83			No.126	Gate Rev + Rev	26
No.41			No.84			No.127	Chorus + Rev	27
No.42			No.85			No.128	Delay + Reverb	28
No.43			No.86		1			

MIDI PROGRAM CHANGE MAP

Receive Number	NUMBER	Receive Number	NUMBER	Receive Number	NUMBER
Pro 1	No.	Pro 44	No.	Pro 87	No.
Pro 2	No.	Pro 45	No.	Pro 88	No.
Pro 3	No.	Pro 46	No.	Pro 89	No.
Pro 4	No.	Pro 47	No.	Pro 90	No.
Pro 5	No.	Pro 48	No.	Pro 91	No.
Pro 6	No.	Pro 49	No.	Pro 92	No.
Pro 7	No.	Pro 50	No.	Pro 93	No.
Pro 8	No.	Pro 51	No.	Pro 94	No.
Pro 9	No.	Pro 52	No.	Pro 95	No.
Pro 10	No.	Pro 53	No.	Pro 96	No.
Pro 11	No.	Pro 54	No.	Pro 97	No.
Pro 12	No.	Pro 55	No.	Pro 98	No.
Pro 13	No.	Pro 56	No.	Pro 99	No.
Pro 14	No.	Pro 57	No.	Pro 100	No.
Pro 15	No.	Pro 58	No.	Pro 101	No.
Pro 16	No.	Pro 59	No.	Pro 102	No.
Pro 17	No.	Pro 60	No.	Pro 103	No.
Pro 18	No.	Pro 61	No.	Pro 104	No.
Pro 19	No.	Pro 62	No.	Pro 105	No.
Pro 20	No.	Pro 63	No.	Pro 106	No.
Pro 21	No.	Pro 64	No.	Pro 107	No.
Pro 22	No.	Pro 65	No.	Pro 108	No.
Pro 23	No.	Pro 66	No.	Pro 109	No.
Pro 24	No.	Pro 67	No.	Pro 110	No.
Pro 25	No.	Pro 68	No.	Pro 111	No.
Pro 26	No.	Pro 69	No.	Pro 112	No.
Pro 27	No.	Pro 70	No.	Pro 113	No.
Pro 28	No.	Pro 71	No.	Pro 114	No.
Pro 29	No.	Pro 72	No.	Pro 115	No.
Pro 30	No.	Pro 73	No.	Pro 116	No.
Pro 31	No.	Pro 74	No.	Pro 117	No.
Pro 32	No.	Pro 75	No.	Pro 118	No.
Pro 33	No.	Pro 76	No.	Pro 119	No.
Pro 34	No.	Pro 77	No.	Pro 120	No.
Pro 35	No.	Pro 78	No.	Pro 121	No.
Pro 36	No.	Pro 79	No.	Pro 122	No.
Pro 37	No.	Pro 80	Na.	Pro 123	No.
Pro 38	No.	Pro 81	No.	Pro 124	No.
Pro 39	No.	Pro 82	No.	Pro 125	No.
Pro 40	No.	Pro 83	No.	Pro 126	No.
Pro 41	No.	Pro 84	No.	Pro 127	No.
Pro 42	No.	Pro 85	No.	Pro 128	Ņo.
Pro 43	No:	Pro 86	No.		

Roland Exclusive Messages

1. Data Format for Exclusive Messages

Roland's MIDI implementation uses the following data format for all exclusive messages (type IV):

Byte	Description
FOH	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
CMD	Command ID
[BODY]	Main data
F7H	End of exclusive

MIDI status: FOH, F7H

An exclusive message must be flanked by a pair of status codes, starting with a Manufacturer-ID immediately after F0H (MiDI version1.0).

= Manufacturer ID: 41H

The Manufacturer-ID identifies the manufacturer of a MIDI instrument that triggers an exclusive message. Value 41H represents Roland's Manufacturer-ID.

= Device ID : DEV

The Device-ID contains a unique value that identifies the individual device in the multiple implementation of MIDI instruments. It is usually set to 00H - 0FH, a value smaller by one than that of a basic channel, but value 00H - 1FH may be used for a device with multiple basic channels.

Model ID: MDL

The Model-ID contains a value that uniquely identifies one model from another. Different models, however, may share an identical Model-ID if they handle similar data.

The Model-ID format may contain 00H in one or more places to provide an extended data field. The following are examples of valid Model-IDs, each representing a unique model:

01H 02H 03H 00H, 01H 00H, 02H 00H, 00H, 01H

= Command ID : CMD

The Command-ID indicates the function of an exclusive message. The Command-ID format may contain 00H in one or more places to provide an extended data field. The following are examples of valid Command-IDs, each representing a unique function:

01H 02H 03H 00H, 01H 00H, 02H 00H, 00H, 01H

= Main data: BODY

This field contains a message to be exchanged across an interface. The exact data size and contents will vary with the Model-ID and Command-ID.

Address-mapped Data Transfer

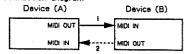
Address mapping is a technique for transferring messages conforming to the data format given in Section 1. It assigns a series of memory-resident records-waveform and tone data, switch status, and parameters, for example-to specific locations in a machine-dependent address space, thereby allowing access to data residing at the address a message specifies.

Address-mapped data transfer is therefore independent of models and data categories. This technique allows use of two different transfer procedures: one-way transfer and handshake transfer.

#One way transfer procedure (See Section 3 for details.)

This procedure is suited for the transfer of a small amount of data. It sends out an exclusive message completely independent of a receiving device status.

Connection Disgram

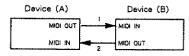


Connection at point 2 is essential for "Request data" procedures. (See Section 3.)

Handshake transfer procedure (See Section 4 for details.)

This procedure initiates a predetermined transfer sequence (handshaking) across the interface before data transfer takes place. Handshaking ensures that reliability and transfer speed are high enough to handle a large amount of data.

Connection Diagram



Connection at points 1 and 2 is essential.

Notes on the above two procedures

- * There are separate Command-IDs for different transfer procedures.
- Devices A and B cannot exchange data unless they use the same transfer procedure, share identical Device-ID and Model ID, and are ready for communication.

3. One way Transfer Procedure

This procedure sends out data all the way until it stops and is used when the messages are so short that answerbacks need not be checked. For long messages, however, the receiving device must acquire each message in time with the transfer sequence, which inserts intervals of at least 20 milliseconds in between.

Types of Messages

Request data 1 RQ1 (11H)	
Data set 1 DT1 (12H)	

#Request data = 1: RQ1 (11H)

This message is sent out when there is a need to acquire data from a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of data required.

On receiving an RQ1 message, the remote device checks its memory for the data address and size that satisfy the request.

If it finds them and is ready for communication, the device will transmit a "Data set 1 (DT1)" message, which contains the requested data. Otherwise, the device will send out nothing.

Byte	Description
FOH	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
118	Command ID
ван	Address MSB ; ; ; LSB
ssH	Size MSB
ļ !	L.SB
sum	Check sum
F7H	End of exclusive

- The size of the requested data does not indicate the number of bytes that will make up a DT1 message, but represents the address fields where the requested data resides.
- Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
- The same number of bytes comprises address and size data, which, however, vary with the Model-ID.
- * The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address size, and that checksum are summed.

= Data set 1 : DT1 (12H)

This message corresponds to the actual data transfer process. Because every byte in the data is assigned a unique address, a DTI message can convey the starting address of one or more data as well as a series of data formatted in an address-dependent order.

The MIDI standards inhibit non-real time messages from interrupting an exclusive one. This fact is inconvenient for the devices that support a "soft-through" mechanism. To maintain compatibility with such devices, Roland has limited the DTI to 256 bytes so that an excessively long message is sent out in separate segments.

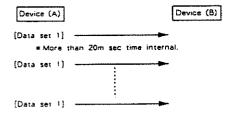
Byte	Description
FOH	Exclusive
41H	Manufacturer ID (Roland)
DEV	Device (D
MDL	Model ID
12H	Command ID
aaH	Address MSB
ddH sum	Data Check sum
F7H	End of exclusive

- A DT1 message is capable of providing only the valid data among those specified by an RQ1 message.
- Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
- The number of bytes comprising address data varies from one Model-ID to another.
- The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

= Example of Message Transactions

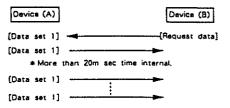
Device A sending data to Device B

Transfer of a DT1 message is all that takes place.



Device B requesting data from Device A Device B sends an RQ1 message to Device A. Checking

Device B sends an RQ1 message to Device A. Checking the message Device A sends a DT1 message back to Device B.



4. Handshake Transfer Procedure

Handshaking is an interactive process where two devices exchange error checking signais before a message transaction takes place, thereby increasing data reliability. Unlike one-way transfer that inserts a pause between message transactions, handshake transfer allows much speedier transactions because data transfer starts once the receiving device returns a ready signal.

When it comes to handling large amounts of data-sampler waveforms and synthesizer tones over the entire range, for example-across a MIDI interface, handshaking transfer is more efficient than one-way transfer.

Types of Messages

Message	Command ID	
Want to send data	WSD (40H)	
Request data	RQD (41H)	
Data set	DAT (42H)	
Acknowledge	ACK (43H)	
End of data	EOD (45H)	
Communication error	ERR (4EH)	
Rejection	RUC (4FH)	

=Want to send data: WSD (40H)

This message is sent out when data must be sent to a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of the data to be sent.

On receiving a WSD message, the remote device checks its memory for the specified data address and size which will satisfy the request. If it finds them and is ready for communication, the device will return an "Acknowledge (ACK)" message.

Byte	Description
FOH	Exclusive status
41H	Manufacturer (D (Roland)
DEV	Device ID
MOL	Mage: ID
40H	Command ID
аан	Address MSB
55H	Size MSB : : LSB
sum	Check sum
F7H	End of exclusive

Otherwise, it will return a "Rejection (RJC)" message.

- The size of the data to be sent does not indicate the number of bytes that make up a "Data set (DAT)" message, but represents the address fields where the data should reside.
- Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into preletermined address fields before it is exchanged across the interface.
- The same number of bytes comprises address and size data, which, however, vary with the Model-ID.
- The error checking process uses a checksom that provides a hit pattern where the least significant 7 bits are zero when values for an address, size, and that checksom are summed.

= Request data: RQD (41H)

This message is sent out when there is a need to acquire data from a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of data required.

On receiving an RQD message, the remote device checks its memory for the data address and size which satisfy the request.

If it finds them and is ready for communication, the device will transmit a "Data set (DAT)" message, which contains the requested data. Otherwise, it will return a "Rejection (RJC)" message.

Byte	Description
FOH	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
41H	Command (D
aaH	Address MSB
55H	Size MSB
\$um	Check sum
₽7H	End of exclusive

- * The size of the requested data does not indicate the number of bytes that make up a "Data set (DAT)" message, but represents the address fields where the requested data resides.
- Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
- The same number of bytes comprises address and size data, which, however, vary with the Model-ID.
- The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

≈ Data set: DAT (42H)

This message corresponds to the actual data transfer process. Because every byte in the data is assigned a unique address, the message can convey the starting address of one or more data as well as a series of data formatted in an address-dependent order.

Although the MIDI standards inhibit non-real time messages from interrupting an exclusive one, some devices support a "soft-through" mechanism for such interrupts. To maintain compatibility with such devices, Roland has limited the DAT to 256 bytes so that an excessively long message is sent out in separate segments.

Byte	Description
FOH	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
42H	Command ID
Ба Н	Address MSB : : : LSB
дан	Data
sum	Check sum
£7H	End of exclusive

- A DAT message is capable of providing only the valid data among those specified by an RQD or WSD message.
- * Some models are subject to limitations in data formul used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
- The number of bytes comprising address data varies from one model.
 ID to another.
- The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

≠ Acknowledge: ACK (43H)

This message is sent out when no error was detected on reception of a WSD, DAT. "End of data (EOD)", or some other message and a requested setup or action is complete. Unless it receives an ACK message, the device at the other end will not proceed to the next operation.

Byte	Description
FOH	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
43H	Command ID
F7H	End of exclusive

#End of data: EOD (45H)

This message is sent out to inform a remote device of the end of a message. Communication, however, will not come to an end unless the remote device returns an ACK message even though an EOD message was transmitted.

Byte	Description
FOH	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MOL	Model ID
45H	Command iD
F7H	End of exclusive

Communications error: ERR (4EH)

This message warns the remote device of a communications fault encountered during message transmission due, for example, to a checksum error. An ERR message may be replaced with a "Rejection (RIC)" one, which terminates the current message transaction in midstream.

When it receives an ERR message, the sending device may either attempt to send out the last message a second time or terminate communication by sending out an RIC message.

Byte	Description
FOH	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MOL	Model ID
4EH	Command ID .
₽7H	End of exclusive

= Rejection: RJC (4FH)

This message is sent out when there is a need to terminate communication by overriding the current message. An RIC message will be triggered when :

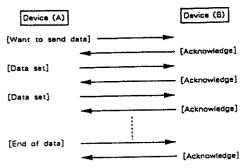
- a WSD or RQD message has specified an illegal data address or size.
- the device is not ready for communication.
- an illegal number of addresses or data has been detected.
- data transfer has been terminated by an operator.
- a communications error has occurred.

An ERR message may be sent out by a device on either side of the interface. Communication must be terminated immediately when either side triggers an ERR message.

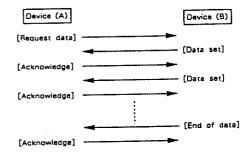
	_
Byta	Description
FOH	Exclusive status
412	Manufacturer ID (Roland)
DEV	Device (D
MDL	Model /D
4FH	Commana ID
F74	End of exclusive

=Example of Message Transactions

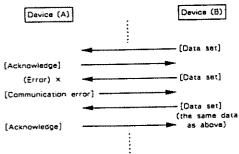
● Data transfer from device (A) to device (B).



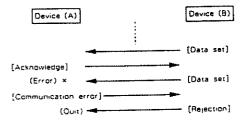
● Device (A) requests and receives data from device (B).



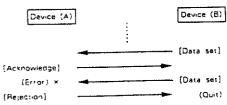
- Error occurs while device (A) is receiving data from device (B).
- 1) Data transfer from device (A) to device (B).



 Device (B) rejects the data re - transmitted, and duits data transfer.



3) Device (A) immediately quits data transfer.



Model SE-50

MIDI Implementation

Date: Jul. 18 1990

Version: 1.00

1.TRANSMITTED DATA

ESystem Exclusive Messages

Status

FOH System Exclusive

EOX (End Of System Exclusive)

Sends patch setting parameters on an external request or a bulk dump instruction.

2.RECOGNIZED RECEIVE DATA

■Channel Voice Messages

Program Change

Status CnH

Second ppH

n * MIDL Channel

0H - FH (1 - 16)

pp = Program Number 00H - 7FH (0 - 127)

Calls a patch corresponding to the received program number.

Pitch Bend Change

Status EnH

Second IIH

Third mmH

(Data LSR)

(Data VISR)

n = MiDi Channei II = Control Value 0H - FH (1 - 16)

00H - 7FH (0 - 127)

mm = Control Value 00H - 7FH (0 - 127)

Recognizes only the MSB of the 3rd byte of data.

Channel Pressure

Status Dnii

Second vvH

n = MIDI Channel

0H - FH (1 - 16)

vv * Control Value

00H - 7FH (0 - 127)

Control Change

Second

ccH

n * MIDI Channel

ev H

Third

OH - FH (1 - 16)

vv - Control Value

 $cc \approx Control\ Number = 00H \approx 1FH\ (0 \approx 31) - 40H = 5FH\ (64 \approx 95)$

00H - 7FH (0 127)

System Exclusive Messages

Status

System Exclusive

EON (End Of System Exclusive)

Allows generation of a request for or writing of setting parameters of a patch or temporary area.

3.EXCLUSIVE COMMUNICATIONS

The SE+50 can send and receive setting parameters to from external MIDI instruments using exclusive massages.

Bulk domps system data or, on a patch bassis, data in the internal memory.

When set to data load mode and ready for receive status, receive exclusive messages and stores the received data into the internal memory area.

Carries out exclusive communications in accordance with protocol of Roland Exclusive Format, type IV, one way communications,

Request Data (One way) RQ1 11H

If the received exclusive message contains the adresses that match parameter addresses and the size of addresses is one or more, sends the data in these adress locations patch by patch, using data set (DT1).

The device ID is the value of MIDI channel subtracted by I. The SE - 50 itself does not send this message.

Byte	Description
FOH	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID: DEV = 0 - FH (1ch - 16ch)
37H	Model ID (SE - 50)
11H ·	Command ID (RQ1)
ааН	Address MSB
aaH	Address
aaH	Address LSB
\$5H	Size MSB
ssH	Size
ssH	Size LSB
\$ បភា	Checksum
F7H	EOX (End of Exclusive)

Data set (One way) DTI 12H

When set to data load mode and ready for receive data, stores the received data into the internal memory.

Sends this message in the following case.

Sends the data specified by the received "Request Data",

When bulk dump is activated, sends setting parameters patch by patch.

flyte	Description
FOH	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID: DEV = 0 - FH (1ch - 16ch)
37H	Madet ID (SE - 50)
12H	Command ID (DT1)
aa	Address MSB
aaH	Address
aafi	address LSB
ddH	Data
:	:
5um	Checksum
F7H	EOX (End of Exclusive)

4.ADDRESS MAPPING OF PARAMETERS

The address is displayed under 7 - bit hexadecimal notation.

Maress	458		LSB	
Torts Hex	04	cc	DD DD	 -
9 inary	0000_00ab	0000_0000	Oddd dddd	

a : system - data

b : Temporary / Internat Wemory 0/1

ccc_cccc - Willi Mapping/SN Shift(System) Patch Number(Temporary/Internal Memory)

ddo_dddd : WIDI Program Change No. (WIDI Wapping) S% Shift Start/End(SW Shift) Parameter Address(Temporary/Internal Newory)

Effective address of each parameter is the start address of the correcspoinding block plus an offset address.

System Area

	ÀŒ	ire:	, SS :	Descr	iption	
•-						
ŧ	QQ	00	OGHI	Oaas_aaaa8	I MIDI Mapping Prg L	1
;	00	00	: 1			
	00	00	7(8)	Ossa assaB	I MIDI Mapping Prg 128	
					SW Shift Start	
				_	SW Shift End	
		- •		-		

Temporary Area

Address	Description	
	H: 000a_aaaa8 : Temporary Algorithm H: 0000_000a8 : Effect On/Off (0:OFF, 1:ON	*Table I - 28 *
02 06 02	H: 0000_000aB : Temporary Parameter : WS	B !
02 00 03 02 00 :	H- Oasa_sasaB : Temporary Parameter 1 LS:	: 1
92 99 3 82 99 56	: H 0000_000aB · Temporary Parameter 51 MS	B .
02 00 67	N: Osas_assaB : Temporary Parameter 51 LS N: Osas_assaB Temporary Name 1	
02 00 69	H Ossa_assa8 Temporary Name 2	
02 00 3 02 00 73	: 37 H. Gaaa_aaaaB : Temporary Name 12	- 127 (ASCIT CODE) :
	H: 0000_0000B : Temporary End Of Mame H: 0000_0000B : Temporary SOUND CHANGE RE	QUEST !
	H. 0000_00008 : Temporary SOUND CHANGE RE	QUEST !

- *Sound change request is a parameter resides only in the temporary area. Receiving this parameter after temporary area data alters the tone color.
- * The SE 50 does not send the temporary data.

Internal Memory Area

Address	Description	
	000a_aaaaB Number	
	0000_00008 Xumber	
03 GO 02H	0000_000aB - Number	1 Parameter 1 WSB
	Casa_sasaB Number	l Parameter LSB
03 00 04H.	0000_000aB . Number	Parameter 2 MSB
03 00 05H	Osas_sasa8 : Number	l Parameter 2 LSB
03 00 :		<u>:</u>
03 00 :		;
03 00 66H	0000_000aB ' Number	l Parameter 51 MSB
03 00 67H	Qaaa aaaaB Xumber	l Parameter 51 LSB
03 OD 68H	Daaa_aaaaB Kumber	1 Name 1
03 CO 69H	Oaaa_aaaaB : Number	
03 00 ;		: 37 127(ASCII CODE)
03 00 73H	Osaa_sasa8 Yueber	i Name 12
03 00 74H	0000,00008 Aumber	End Of Name
03 CO 75H	0000_0000B Number	L End Of Data
03 :		:
03		:
03 :		:
03 53 GGH	000a_aasa8 Number	100 algorizum *Table i - 28
03 63 01H	0000_00008 Number	to ocne.
03 53 02H		100 Parameter 1 VS8
03 63 03H	Daaa_aaaa8 Number	100 Parameter 1 458
03 63 :		•
03 53		‡
93 63 66H		100 Parameter 51 MSB
03 63 67H		100 Parameter 51 LSB
03 53 58H	Oaaa aaaaB : Number	100 Yame
J3 53 69H	Qaaa aaaaB Number	100 Name 2
03 43		32 (45011 CODE)
03 63 73H	,	· 100 Name 12
03 63 748		
93 53 758	0000_00008 \umber	100 End of Data

*Even for a parameter whose setting range is 7 bits (128) or less, a pair of MSB and LSB must be sent.

Table 1 - 28

Binary figures under "Description" is the type of each parameter value, and decimal figures at the right settable range of the parameter.

If the SE - 50 receives data outside its settable range, it will fail to generate correct effects.

- * Any data outside the settable range, stored in the internal memory, will be contracted to a value within the range on power up.
- * Transfer "0" if an offset address does not exist.
- *Setting range of MiDI control or MIN/MAX depends on assigned parameters. Refer to Table 29 \sim 39.

Offset Address		Descri	otion	ı								
							-··-·					
		80000	_		(Ap :	9						
yın	. 0000	00008	. DLX	(#)								
649	8000	000aB	. Par	. 2	MSB	REVERB	8EV	TIME	MSB	0 -	199	
		аааав						TIME	L58	(0. 1-	20. 0s)	
		000aB					PRE	DELAY	MSB	0 -	200	
		aaaa8					PRE	DELAY	LSB	{O -	400ms)	
80	0000	000a8	: Pai	4	458		ER T	YPE	MSB	0 -	3	
Hea	Qaaa	aasa8	: Pai	- 4	LSB			YPE				
OAH	i 0000,	000aB	i Par	ă	MSB			PELAY				
		_aaaaB									400 = 5)	
		000a8						EVEL			100	
		_22228						EVEL			_	
		000a8						AVP				
OFH	l Caaa	_aaaaB	i Par	7	FZB		## 1	MP	Γ7R	(0. 1-	1. 02	
(2)		000-0	i . 15		1160		LAK	LEVEL	HCD	۸.	74	
		BEDDO.									· (2dB)	
		_000aB						LEVEL				
		azaaB									-1248)	
		_000aB					LPF			0 -		
		aaaaB					LPF				(z-THRC)	
		000a8					HPF		USB	0 -	11	
198	! Qaaa	aasaB	: Pa	г 12	L58		HPF		LS8	(THRI	!-lkHz)	
LAI	0000	_000aB	. Pa	13	458		LEV	EL	4SB	Đ -	100	
181	: Oama	_aaaaB	. Pa	r 13	1.58		LEVI	EL	LSB			
						DIRECT				٥ -	100	
IF	: Oaaa	_aaaa8	Pa	r I	LSH		LEV	EL	LSB			
				_ ~.	1157	114 5 7 5 7	, 59	EL	uen	. o -	100	
						Waster		EL.			100	
28	ı vasa	_aaaaB	. ra	1 2.	1.58		FEA	t.L	430			
68	l Qaaa	_aaaaR	Na	ne	1							
:					:							
		Resec.										
74	1 0000	0000B	En	n o	! \a∞	ú.						
75	1 0000	82000	₹\	5 S	- Dat	3						

* Table 2
HALL 2
Offset
Address Description:

00H 0000 000IR algorithm 1 91H- 0000_0000R - DUADE: 04H- 0000 000m6 Par 1 MSS REVERB REV FINE MSB 0 - 199 OSH Osas sasaB Par 1 156 REV TIME LSB (0.1-20.0s) 05H 0000 000aH Par 1 MSB PRE DELAY MSB 0 - 200 PRE DELAY LSB (0 400ms) 07H OaaajusaaB Por sitSB HE DAMP USB 0 - 3 DBH: 0000 000aB Par : NSB HF DAMP 1.58 (0.1-1.0) 090: Dasa sasaB Par 1 LSB 12H 0000 000aB Par 9 WSB LOW LEVEL USB 0 - Z4 LOW LEVEL LSB (-12--12d8) 138 Gasa Jasail Par 9 LSB 14H 0000 000AR Par 11 VSR 15H 0ARA ASSAE Par 11 ISE BI LEVEL USB 0 24 H1 LEVEL 158 1 12 -1248) 45B 0 - 10 16H 0000 000AE Par ... MSF t.PF LSS (5008z THRL) LPF 178 Cawa sasaR Pur .1:59

```
18HI 0000_000a8 : Par 12 MS8
       18H: 0000_000aB : Par 12 MSB
                                                 MSB 6 - 11
                                                                                                                       HPF
                                       HDE
                                                                                                                                MSB 0 - 11
                                                  LS8 (THRU-IKHZ)
                                                                                                                       RPF
                                                                                      19#: Oasa aasaB · Par 12 LSB
       19H Gasa assaB : Par 12 LSB
                                        MPF
                                                                                                                                LSB (THRU-1kHz)
                                                                                                                       LEVEL
       1AH: 6000_000aB · Par 13 WSB
                                                                                     1AH! 0000 000a8 | Par 13 WSR
                                                 MS8 0 - 100
                                        I FVFI
                                                                                                                                MSH 0 - 100
                                                                                     18Hi Casa_asaaB + Par 13 LSB
                                                                                                                       LEVEL.
       1881 Qasa_assa8 : Par 13 LS8
                                        LEVEL
                                                 1.58
                                                                                                                                LSB
                                                                                      IEHI 0000_000aB : Par IS NSB DIRECT LEVEL
       IEHI 0000_000aB : Par 15 MSB DIRECT LEVEL
                                                 MSR 0 - 100
                                                                                                                                MSB D - 100
      1FH! Gaaa_aaaaB 1 Par 15 LSB
                                                                                     IFH: Oama_mamaB : Par IS LSB
                                        LEVEL.
                                                 LSB
                                                                                                                       LEVEL
                                                                                                                                LSB
                                                                                                  1
      ZAHI GODO_GODAB | Par 21 MSB MASTER LEVEL
                                                  MSB 0 - 100
                                                                                     ZAHI 0000 000aB i Par 21 MSB MASTER LEVEL
                                                                                                                                MSB 0 - 100
       2881 0ass_sass8 | Par 21 LSB
                                                  LSB
                                                                                     28H | Qaaa_aaaaB | Par 21 LSB
                                                                                                                       LEVEL
                                                                                                                                LSB
                                         LEVEL
      68X | Cana anna6 ! Kame |
                                                                                     SSE! Ozaz zazaB | Same 1
       : :
                  .
                                                                                      : 1
                                                                                                - 1
       73Hi Casa assa8 t Xame 12
                                                                                      73HI Qaaa aaaaB | Xame 12
       74HI 0000 00008 : End Of Kame
                                                                                      7481 0000 0000B i End Of Name
      75H1 0000_0000B | END Of Data
                                                                                      75HI 0000_0000B | EXD Of Data
* Table 3
                                                                               * Table 5
ROOM
                                                                               AMBIENCE
                                                                               Offset :
 Address
                                                                               | Address |
               Description
                                                                                              Description
       DON: 0000_0010B : algorithm 2
                                                                                     00H: 0000_01008 : algorithm 4
      01H1 0000_0000B : DUMORY
                                                                                     01H1 0000 0000B : DUMAY
                                                                                                                       04H: 0000_000aB | Par 2 MSB AMBIENCE WODE
       OSH: Casa_sasaB | Par 2 LSB
                                         REV TIME LSB (0.1-20.0s)
                                                                                     05H: Caaa_aaaB | Par 2 LSB
       06H1 0000_000aB | Par 3 MSB
                                         PRE DELAY MSB 0 - 200
                                                                                     06H: 0000_000aB | Par 3 MSB
                                                                                                                       PRE DELAY MSB 0 - 200
                                         PRE DELAY LSB (0 - 400ms)
       07H: Oasa_sasa8 : Par 3 LS8
                                                                                     OTH: Osas_sassB : Par 3 LSB
                                                                                                                       PRE DELAY LSB (0 - 400ms)
                                                                                     08H: 0000_000aB ! Par 4 MSB
       08H 0000_000aB : Par 4 MSB
                                         ER TYPE MSB 0 - 3
                                                                                                                       ER TYPE 458 0 - 3
                                         ER TYPE LSB (1 - 4)
       09H. Oaaa_aaaaB ! Par 4 LSB
                                                                                     09Hi 0ama_mama8 | Par 4 L58
                                                                                                                       ER TYPE LSB (1 - 4)
       0AH: 0000_000aB : Par 5 MS8
                                         ER DELAY MSB 0 - ZGO
                                                                                     OAH: 0000_000aB : Par 5 MSB
                                                                                                                       ER DELAY WSB 0 - 200
       OBH Casa_sasa8 : Par 5 LSB
                                         ER DELAY LSB (0 - 400ms)
                                                                                     OBH: Gaam_amaaA - Par 5 ESB
                                                                                                                       ER DELAY LSB (0 - 400ms)
       OCH: 0000_000aB : Par 6 MSB
                                         ER LEVEL MSB 0 - 100
                                                                                     OCR: 0000_000aB : Par 6 MSB
                                                                                                                       ER LEVEL MSB 0 - 100
       ODH! Gaaa_aaaaB ! Par & LSB
                                         ER LEVEL LSB
                                                                                     ODHI Gaza_azaaB : Par 6 LSB
                                                                                                                       ER LEVEL LSB
                                         HF DAMP MS8 0 - 9
       DEH: 0000_000a8 : Par 7 MS8
                                         HF DAWP LSB (0.1-1.0)
       OFH Case asses Par 7 LSB
                                                                                      12H1 0000 000aR : Par 9 KSB
                                                                                                                       LOW LEVEL MS8 0 - 24
                                                                                     13Hi Gasa_asaaB | Par 9 LSB
                                                                                                                       LOW LEVEL LSB (-12-+1248)
       12H 0000_000aB | Par 9 USB
                                         LOW LEVEL MSB 0 - 24
                                                                                     1481 0000_000aB : Par 10 MSB
                                                                                                                       HI LEVEL MSB 0 - Z4
       13H: Oass_sass6 | Par 9 LSB
                                         LOW LEVEL LSB (-12-+12dB)
                                                                                      15H Gasa_assaB | Par 10 LSB
                                                                                                                       HI LEVEL LS8 (-12-+12d8)
       14%1 0000_000aB | Par 10 MSB
                                         HI LEVEL MSS 0 - 24
                                                                                      16H| 0000_000aB ! Par 11 MSB
                                                                                                                                MSB 0 - 10
       15H: Osaa saasB : Par 10 LSB
                                         HI LEVEL LSB (-12-+12dB)
                                                                                      17H1 Qaaa_aaaaB ! Par 11 LSB
                                                                                                                       LPF
                                                                                                                                LSB (506Hz-THRU)
                                                  MSB 0 - 10
       16H: 0000_000aB : Par 11 MSB
                                                                                     18#: 0000_000aB . Par 12 MSB
                                                                                                                                MSB 0 - 11
                                         LPF
                                                                                                                       HPF
       17H - Casa_sassB : Par 11 LSB
                                                  LSB (500Hz-THRU)
                                         1.PF
                                                                                      19HI Gasa_assaB ! Par 12 LSB
                                                                                                                       HPF
                                                                                                                                LSB (THRU-IKHZ)
       18H: 0000_000aB : Par 12 MSB
                                                  MSB 0 - 11
                                                                                     1AH! 0000_000a8 : Par 13 XSH
                                                                                                                       LEVEL
                                                                                                                                MSB 0 - 100
       19# Ozas_sasaB : Par 12 LSB
                                         HPF
                                                  LSB (THRU-1kHz)
                                                                                      IBH! Caaa_aaaa8 : Par 13 LSB
                                                                                                                       LEVEL
                                                                                                                                158
       1AH. 0000_000a8 ! Par 13 MSB
                                                  MSB 0 - 100
                                         LEVEL
       18H Oasa_assa8 | Par 13 LSB
                                         LEVEL
                                                 LSB
                                                                                      IEN: 0000_000aB Par 15 MSB DIRECT LEVEL
                                                                                                                                MSB 0 - 100
                                                                                     IFH: Casa_ssasB Par 15 LSB
                                                                                                                                LSB
                                                                                                                       LEVEL
       IEH 0000_000aB Par 15 WSB DIRECT LEVEL
                                                 MSB 0 - 100
                                                                                      IFH Gasa_assaB . Par 15 LSB
                                         LEVEL
                                                  LSB
                                                                                                                                N28 6 - 100
                                                                                      28H: Osaa sasa8 Par 21 LS8
                                                                                                                       LEVEL
                                                                                                                                £SA
       2AH 0000 000aB Par 21 MSB WASTER LEVEL
                                                  MSB 0 - 100
       ZBH Oasa sasaB Par 21 LSB
                                         LEVEL
                                                  LSB
                                                                                     68H Daaa aaaa8 Name 1
       68R Oaaa_aaaaB : Xame 1
                                                                                     739: Oasa_aaaaB Name 12
                                                                                     748 0000 0000B End 01 Vame
       73H Gasa_sasaB Name 12
                                                                                     758: 0000 0000B END Of Data
       14H 0000 00008 End Of Yame
       15H 0000 0000B EXD Of Data
                                                                               * Table 6
                                                                               GATE REVERB
                                                                               PLATE
                                                                                Offset
                                                                                Address
                                                                                              Description
 Offset
                                                                                             ....
                                                                                     00H 0000,01018 algorithm 3
             Description
 Address
            01H 0000 3000H DLVNO
      00H 0000 00HB algorithm 3
      01H 0000 0000B : DUAMY
                                                                                     04H 0000_000aB Par 2 NSB GATE REV HOUE MSB 0 - 3
                                                                                     05H Oama ammaB Par 2 LSB
                                                                                                                       HOUL
                                                                                                                              LSB (NOR, RE, LOR, ROLL)
      04H 0000 000aB Par 2 USB REVERB REV TIME WSB 0 - 199
                                                                                                                       GATE TIME 4SB 0 - 79
                                                                                     62W C ns9 Ba000_0000 H80
                                         REV TOWE USB (0.1-20.0s)
      OSH Oasa aaaaB Par 2 LSB
                                                                                     OTH Gama amama Par 3 LSB
                                                                                                                       GATE TIME ESB (5 - 400ms)
       06H 0000 000aB Par 3 VSB
                                         PRE DELAY WSB 0 - 200
                                                                                     08H: 0000_000aB Par 4 WSB
                                                                                                                       PRE DELAY WSB 0 - 200
       07H Oawa_sasaB Par 3 LSB
                                         PRE DELAY LSB (0 - 400ms)
                                                                                     09H Oasa aasaB Par 4 LSB
                                                                                                                       PRE DELAY USA
       08H 0000 000aB Par 4 45H
                                         HF DAMP MSB 0 - 9
                                                                                     0AH 0000 000aB Par 5 WSB
                                                                                                                       LOW LEVEL WSB 0 - 24
       09H Oasa aasaB Par 4 LSB
                                         HF DAMP LS8 (0.1-1.0)
                                                                                     OBR Dass Sass Par 5 LSB
                                                                                                                       LOW LEVEL LSB (-12 -1208)
                                                                                     OCH. 0000 800aB Par 8 4Sh
                                                                                                                       H! LEVEL WSB 0 Z4
       12H 0000 000aB Par 9 VSB
                                         LOW LEVEL USB 0 - 24
                                                                                     DOM GassiasaaB Par 6 ESB
                                                                                                                       HE LEVEL LSB (-12--1208)
       138 Onua auau8 Par 9 LSH
                                         LOW LEVEL LSB (-12--12dB)
       14H 0000 000aH Par 10 WSB
                                         HI LEVEL USB 0 - 24
                                                                                     12H 0000 000aH Par 3 45H
                                                                                                                                458 0 16
       16H Jana ganaft Par 10 LSH
                                         HI LEVEL ESB (-12--12dB)
                                                                                     13H Dana samab Par 9 LSR
                                                                                                                       1.85
                                                                                                                                LSB (590Hz FBRL)
       16H 0000 000aB Par II USB
                                        LPF MSB 0 10
                                                                                     14H 0000 900aB Par 10 WSB
                                                                                                                                WSB 6 11
                                                                                                                       RP)
       170 Unan anna Par It LSB
                                                 LSB (500Hz-THRU)
                                                                                     ISB Gaas Joans Par 10 LSB
                                                                                                                                LSB (TRRL - IKHZ)
                                                                                                                       RPF
```

IEHI 0000_00008 Par 15 MSB	- 100 - 100 1 - 400 0 - 100 0 - 100 0 - 100 0 - 100
1781 Gasa_sasa8 Par 11 LSB	- 100 1 - 400 2 - 100 3 - 100 3 - 100 0 - 100 0 - 100
IBH: 0000_0000B Par 15 MSB DIRECT LEVEL MSB 0 - 100 19H: 0asa_saaaB Par 12 LSB PAR LSB IBH: 0000_000aB Par 13 MSB LEVEL LSB IBH: 0asa_saaaB Par 13 LSB LEVEL LSB IBH: 0asa_saaaB Par 15 MSB DELAY 3 D.TIME B MSB EBB Casa_saaaB Par 15 LSB D.TIME B MSB Casa_saaaB Par 15 MSB P.TIME B MSB P.TI	- 100 1 - 400 2 - 100 3 - 100 3 - 100 0 - 100 0 - 100
IEHI 0000_00088 Par 15 MS8	1 - 400 0 - 100 1 - 100 0 - 100 0 - 300 0 - 100
IFRI ODDA_GOODB Par IS LSB LEVEL LSB IANI ODDO_GOODB Par IS MSB LEVEL LSB LEVEL LSB IANI ODDO_GOODB Par IS MSB LEVEL LSB IANI ODDO_GOODB Par IS MSB DELAY 3 D. TIME B MSB SB IANI ODDO_GOODB Par IS MSB DELAY 3 D. TIME B MSB IANI ODDO_GOODB Par IS MSB DELAY 3 D. TIME B MSB IANI ODDO_GOODB Par IS MSB DELAY 3 D. TIME B MSB IANI ODDO_GOODB Par IS MSB DELAY 3 D. TIME B MSB IANI ODDO_GOODB Par IS MSB DELAY 3 D. TIME B MSB IANI ODDO_GOODB Par IS MSB DELAY 3 D. TIME B MSB IANI ODDO_GOODB Par IS MSB DELAY 3 D. TIME B MSB IANI ODDO_GOODB Par IS MSB DELAY 3 D. TIME B MSB IANI ODDO_GOODB Par IS MSB IANI ODDO_GOODB Par IS MSB PAR MSB PAR IS MSB PAR IS MSB PAR MSB PAR IS MSB PAR MSB PAR IS MSB PAR IS MSB PAR IS MSB PAR MSB PAR IS MSB PAR IS MSB PAR IS MSB PAR IS MSB PAR MSB PAR IS MSB PAR I	1 - 400 0 - 100 1 - 100 0 - 100 0 - 300 0 - 100
2AHI 0000_000aB Par 21 MSB MASTER LEVEL MSB 0 - 100	0 - 100 0 - 100 0 - 100 0 - 300
2AHI 0000_000aB Par 21 MSB	0 - 100 0 - 100 0 - 100 0 - 300
2AHI 0000_0000B Par 2I MSH MASIER LEVEL LSB LEVEL	0 - 100 0 - 100 0 - 100 0 - 300
TRI Qaaa_aaaa8 Par 21 LSB	0 - 100 0 - 100 0 - 100 0 - 300
Control Cont	1 - 100 0 - 100 0 - 300 0 - 100
	1 - 100 0 - 100 0 - 300 0 - 100
27H 0000_00008 Par 17 MSB FEEDBACK MSB	1 - 100 0 - 100 0 - 300 0 - 100
13H; Qaaa_aaaaB Name 12	1 - 100 0 - 100 0 - 300 0 - 100
74HI 0000_0000B : End Of Name 75H: 0000_0000B : End Of Data 24HI 0000_0000B : Par 18 MSB	0 - 109 0 - 300 0 - 100
75H: 0000_0000B; END 0f Data 25H	0 - 109 0 - 300 0 - 100
25H 0000_000B Par 19 WSB	0 - 300
See	0 - 300
Set	0 - 100
Table	0 - 100
Set	0 - 100
Set	0 - 100
Set	
1 1 1 1 1 1 1 1 1 1	
00H: 0000_0100B: algorithm 6	
00H: 0000_0100B: algorithm 5 01H: 0000_0000B: DUNCKY 27FH: 0aaa_aaaaB: Par 23 LSB FEEDBACK LSB 04H: 0000_0000B: Par 2 MSB REVERB REV TIME MSB 0 - 199 31H: 0aaa_aaaaB: Par 24 LSB PAK LSB 05H: 0aaa_aaaaB: Par 2 LSB REVERB REV TIME LSB (0.1-20.0s) 32H: 0900_000aB: Par 2 MSB LEVEL MSB 05H: 0000_000aB: Par 3 MSB PRE DELAY MSB 0 - 200 33H: 0aaa_aaaaB: Par 25 LSB LEVEL MSB 07H: 0aaa_aaaaB: Par 3 LSB PRE DELAY MSB 0 - 200 07H: 0aaa_aaaaB: Par 3 LSB PRE DELAY MSB 0 - 200 07H: 0aaa_aaaaB: Par 3 LSB PRE DELAY MSB 0 - 3 08H: 0000_000aB: Par 4 MSB ER TYPE MSB 0 - 3 13H: 0aaa_aaaaB: Par 27 MSB DELAY 5 D. TIME H MSB 08H: 0000_000aB: Par 4 MSB ER TYPE MSB 0 - 3 13H: 0aaa_aaaaB: Par 27 LSB D. TIME H MSB 08H: 0000_000aB: Par 2 MSB PRE DELAY LSB (1 - 4) 13H: 0aaa_aaaaB: Par 2 LSB D. TIME H MSB 07H: 0aaa_aaaaB: Par 2 LSB D. TIME H MSB 08H: 0000_000aB: Par 2 MSB DELAY 5 D. TIME H MSB	
OH: 0000_0000B DUNDY OH: 0000_0000B Par 2 MSB	
04H: 0000_00008 Par 2 MSB	A . 18A
04H: 0000_000aB : Par 2 MSB REVERB REV TIME MSB 0 - 199 : 32H: 0000_000aB : Par 25 MSB LEVEL MSB 05H: 0000_000aB : Par 25 MSB LEVEL MSB 05H: 0000_000aB : Par 25 MSB PRE DELAY MSB 0 - 200 : 33H: 0aaa_aaaaB : Par 25 MSB LEVEL LSB 07H: 0aaa_aaaaB : Par 25 MSB LEVEL LSB 07H: 0aaa_aaaaB : Par 25 MSB LEVEL LSB 07H: 0aaa_aaaaB : Par 27 MSB 07H: 0aaaaaaaB : Par 27 MSB 07H: 0aaaaaaaaB : Par 27 MSB 07H: 0aaaaaaaB : Par 27 MSB 07H: 0aaaaaaaaB : Par 27 MSB 07H: 0aaaaaaaaaaaa : Par 27 MSB 07H: 0aaaaaaaaaaaa : Par 27 MSB 07H: 0aaaaaaaaaaaaa : Par 27 MSB 07H: 0aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa	0 - 100
05H: 0aaa_aaaaB : Par 2 LSB	
05H: 0000_000aB	0 - 100
OTH: ORDER 1 2000 Par 2 1 LSB PRE DELAY LSB (0 - 400 ms) 36H: ORDER 0000 ORDER 1 Par 27 MSB DELAY 5 D.TIME H MSB ORNE 0000 ORDER 1 Par 4 MSB ER TYPE MSB 0 - 3 37H: ORDER 0000 Par 4 MSB ER TYPE MSB 0 - 3 37H: ORDER 0000 Par 27 LSB D.TIME H MSB D.TIME H LSB D.T	
ORNI 0000_0008 Par 4 NSB	
ONN 0005 0008 Par 4 NSB ER 17F NSB CT TYPE 158 (1 - 4) : 37H; Oman amama : Par 27 LSB D.TIME H LSB	0 - 200
Only Owner among 1 Page 4 ISB FK ITEC 130 31 3/	
SAN: GOOD COORE; Par 28 MSB D.TIME L MSB	
0AH: 0000_0008 Par 5 MSB EX DELAY MSB 0 200	
OBM! Case assail (Par 5 LSB Ex DELAY LSB (O 400ms)	0 - 100
OCH! OCOO_COURR : Par 6 MSB ER LEVEL MSB U 100	
ODH: Oasa sasas Par 6 LSB ER LEVEL LSB : 38H: Oasa_asasa Far 29 LSB Far 25 LSB	0 - 100
OFHI 0000 0008 PAR 7 MSB HF DAMP MSB 0 - 9 ; 3CHI 0000_0008 PAR 35B PAR 35B	0 - 100
NEW Case 2228 : Par 7 58 HF DAMP 158 (0.1-1.0) : 3DN 0888 8888 FAT 30 LSB FAR LSB	
3EH: 0000_000aB i Par 31 MSB LEVEL NSB	0 - 100
1941 ADMA DADAR I PAR G MAR LOW LEVEL MSB 0 - 24 1 3FH Casa aaaa B : Par 31 LSB LLVEL LSB	
40H; 0000 000mB; Par 32 MSB DELAY LPF MSB	0 - 10
13H Gasa asast Far 9 LSB LOW LEVE LSB LPF LSB	(SOGHz-THRU)
[4H 0000 00086) Par 10 MSB HI CEREU MSB HPF MSB	0 - 11
15H: Gana_anna8 ! Par 10 LSB H: LEVEL LSB (12-1400)	(THRU-1kRz)
16H: 0000_0008 Par 11 USB LPF 850 U - 10	
[TH: Casa_asas Par 11 LSB	0 - 100
18H 0000 0008 Par 12 MSB	
1991 Gana agas Par 12 LSB HPF LSB (THRU-18Hz) ' 49H: Gana agast i rar 36 LSB LEVEL L LSB	0 - 100
LEW 0000 000 PAR 13 MSR LEVEL MSB 0 - 100 ! 4AH; GOOD 000 B ! PAR 37 MSB LEVEL MSB	4 100
18H Qaaa_aaaaB Par 13 LSB LEVEL LSB 4BH Qaaa_aaaaB Par 37 LSB LEVEL & LSB	
188. 4882_1482 . 141. 15 145	
ICH DOOD COOME POR 15 MSR DIRFFT LEVEL MOD U - 100	0 - 100
126: 0000_00086 Fal 13 M36 016CC	
IFH Gaaa_waaa8 Par 15 LS8 LEVEL LS8	
200 200 7 2-21 MFT MATTE FEMIL MSR 0 - 100 58H 02a3 43a3B Name 1	
ZAN UGUU_GOUBB PBF ZI NDB MADIER EESEL ADD TOO	
28H Gaaa_aaaaB Par 21 LSB LEVEL LSB	
73H Qaaa aaaaB Xame 12	
68H OBBA_BABBA Name 1 74H: 0000_30008 End 0f Name	
124 8000 0000 E20 01 page	
(SP CARR ARRAN : NAME (Z	
73H: 0aaa aaaaH	
74H 0000_00008 End of Yame	
74H 0000_0000B End Of Yame	
74H 0000_0000B End Of Name 75U_0000 0000B FN0 Of Data * Table 9	
74H 0000_00008 End of Name	
74H 0000_00008	
74H 0000_00008	-
74H 0000_00008	-
74H 0000_00008	-
Table 8	-
Table 8	
74H 0000_00008	
Table 8	3
74H 0000_00008 End Of Yame	3
74H 0000_00008 End Of Name 75H 0000_00008 END Of Data **Table 9 **MULTI TAP DELAY Diffset	B B
74H 0000_00008 End Of Name 75H 0000_00008 END Of Data	3 3 3
74H 0000_00008	B B B 0 (00
74H 0000_00008	B B B 0 (00
Table 8	B B R U (00 B B O · 190
# Table 9 Table 8	B B B 0 100 B B 0 100
# Table 9 MCLT1 TAP DELAY	B B O - 180
# Table 9 Table 8	B B O - 180
# Table 9 Table 8	3 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
# Table 9 MCLT1 TAP DELAY	3 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
Table 8	3
Table 8	3
Table 8	3
Table 8	3 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
Table 8	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
Table 8	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3

1991	Oaza_aazaB	Par 17 1 CB		PAK	LSB			15%)	Gasa_saan8	Sac 15	e rep		D. TIME H	1 60		
	0000_000aB			LEVEL		0 - 100			0000_000aB				D. TIME L			
	Casa_saasB			LEVEL	LSB	. 100	ì		Casa_sasaB				D. TIME L			,
10117	4000 "00000	181 13 630		LETEL			ì									,
1591							•		G8000_000aB				FEEDBACK		0 - 100	
1531	. nnno_nnaSR .	Par 15 MSB	TAP 3			0 - 2000	1		Caza_aasaB				FEEDBACK			- 1
	Qaaa_aaaaB			D. TIME H			i		0000_000aB				CROSS FB	MSB	0 - 100	!
	0000_000a8			D. TIME L	MSB		1	: 25Ht	¢aaa_aaaaB	: Par 14	LSB		CROSS FB	LSB		;
	Sees_ses0			D. TIME L	LSB		i	t ş								
	0000_000a8			FEEDBACK	MSB	0 - 100		. ZAH E	8s000_000a8	Par 2	¥SB		LPF	NSB	11 - 0	
2311	Caaa_aaaa8	Par 17 LSB		FEEDBACK	LSB		1		Gasas acsaß				LPF	LSB	(SOOHz-THE	ו (ע
2481	0000_000a8	Par 18 MSB		KAS	MSB	0 - 100	1		8s000_000a8				RPF		0 - 11	i
	Gass_sass0			PAR	LSB	-	1		Ossa_sasa8				KPF		(THRU-IKHZ	
26N:	8s000_000a8	Par 19 USB				0 - 100	í		8s000_0000				IK. LEVEL			· ·
	Bass_sss0			LEVEL	LSB				Bassa_sss0				IN LEVEL		0 100	3
				44,44	530											
		Par 21 MSB	T40 4	D. TIME H	LEED	0 - 1006			0600_000a9				EF. LEVEL		0 - 100	1
			IAF 4			0 - 2000		Jint	Essas_sas0				ef. Level			:
	Gass_sss6			D. TIME H					0000_000aB						0 - 100	;
	BE000_000aB			D. TIME L			1		Оава_вава#	Par Z	LSB		DI. LEVEL	LSB		ŧ
2011	Gasa_sasaB	Par ZZ LSB		D. TIME L			ı			:						
	Es000_0000			FEEDBACK		0 - 100	•		0000_000aB			MASTER		M28	0 - 100	:
	Oaaa_aaaaB			FEEDBACK				37H;	Gaaa_aaaaB	Par 2	7 LSB		LEVEL	LSB		
	0000_000a8			PAS	MSB	0 - :00										
	Caaa_aaaa8			PAN	LSB		•	. 68H	Gaaa_aaaaB	: Kame	ι					
	0000_000a8			LEYEL	MSB	0 - 100		: 1			:					
33K:	Caaa_aasaB	: Par Zá LSB		LEVEL	LSB			73H1	Casa_aaaa8	. Xame	12					
								7481	G000_0000B	. End 0:	Same					
3684	8a000_000a8	Par 27 MSB	TAP 5	D. TEME H	MSB	0 - 2000	;		0000_00008							
	Casa_sass8			D. TIME H									*****			
	8e000_000a8			D. TIME L												
	0888_8880			O. TIME L				* Table 11								
	85000 0000			FEEDBACK		G - 100 '			3000							
						0 - 100		SPACE CHO								
	Casa_sasaB			FEEDBACK			•									
	0000_000aB			PAR		0 - 100		Offset								
	Ozza_zazaB			PAR	LSB		,	. Address :								
	0000_000aB					0 - 100										
	Oasa_saaaß				1.58			: 50%1	0000_1018B	algor	ithm 10					
40#	0000_000sB	Par 32 MSB	DELAY	LPF	45B	0 - 10		91H1	0000_0000B	DUILDAY						
418	Ossa_assa8	Par 32 LSB		LPF	LSB	(500Hz-THRU)	•	Į.								
42H	0000_000aB	Par 33 458		HPF	MSB	0 - 11		: 04H!	0000_000af	Par 3	USB	CHORUS	MODE	MSB	0 - 2	
43H+	Oaaa_aasaB	Par 33 LSB		UPF	LSB ((THRU-1kHz)	,		Sess_ses0				MODE		(1 - 3)	
									0000_000aB				M. WAVE		0 - 1	
48H	0000_000aB	Par 35 VSB	DIRECT	LEVEL L	MZB	0 - 100			0202_2226				M. WAVE		(TRI, SINE)	
49H:	Cana_mann8	Par 36 LSB		LEVEL L	1.58				8s000_0000				PRE DELAY			,
	GG00_000aB			LEVEL R		6 - 100			Casa_asaa8				PRE DELAY		U - 200	
	Caaa_aaaa8			LEVEL R		. (55			0000_000a8							
1011	***************************************	161 31 530		PP. PP. W	200								RATE		0 - 100	
200	0000 000-0	De- 10 NCG	HACTER	LOUP	1457				Casa_aasaB				RATE	LSB		
		Par 40 US8	Madick			0 - 100			86000_0000				DEPTH		0 - 100	:
214	0aaa_aaaa0	Par 40 1.5B		LEVEL	LSB				Oasa_sass8				DEPTH	LSB		
									0000_000a8				DIFFUSION	USB	0 - 100	
	Фаза_азвав	Same 1						OFHI	Gaaa_aaaaB	Par	LSB		DIFFUSION	LSB		
:		:							0000_000aB				LEVEL	MSB	0 - 180	
7311	Oaaa_aaaaB	Name 12						11#1	Oaaa_aaaa8	Par l	LS8		LEVEL	LSB		
748.	0000_0000B	End Of Name						12H;	0000_000aB	Par 9	1 N2B	DIRECT	LEVEL	VSB.	0 - 100	
75H	0000_00008	END Of Data							Oaaa_aaaaB				LEVEL	LSB	-	
							•									
								1EH:	85000_000aB	Par 13	USR	WASTER	1 FVF1	USB	0 - 100	
* Table 10									Oaaa_aaaaB	Par 13			LEVEL	LSB		
STEREO DE																
	*****							ZAH:	0000_000aB	Par 21	usa	MIDE C	NT RECEIVE	USR	0 - 66	
Offset									Оааа_аиаав	Par 2		7,0,	RECEIVE			
Address	Descrip	วเโดก													F. TOLCH, P. B	EXD.
															:11, = 64 =	
OCH.	81001_000B	algorithm 9												•		
	0000_00008	DUIDIY						36H:	0000_000a8	Par 21	USR	MIBI C	NT ASSIGN	RSB	9 - 2	
									Овия ваявВ	Par 2		~- · · · · · ·	ASSIGN	1.58	•	
048	0000_000aB	Par 2 USH	DELAY I	D. TIME II	RZW	0 - 746		4 111-	,ed866	- 44 4			533 £63	(35)		
	Gasa_sasaB	Par I LSB	1	D. TIME H				100	0000_000aH	D) Her	uana a	PT 11.11	,		
	0000_000aB	Par 3 VSR		D. TIME L						Par 31		MIDI C			0 - 100 1	abie29
	Oaaa aaaaB							4(11)	Оага наазБ	Par 32	LDB		417	LSB		
		Par 3 LSR		D. TIME L		A 105				_						
	0000_000a8	Par : NSR		FEEDBACK		0 100			0000_0009R	Par 36		AID1 C	NT MAX	1153	0 - 100	
	Seere ees0	Par & LSB		FEEDRACK				499	Ольн налав	Par 3	LSP.		MAX	:.SE		
	9#000 0000	Par 3 VS8		CROSS FB		0 100										
ARO	Сава зазаб	Par 5 LSB		CROSS FB	LSH			68H	Gasa saaan	'ase	Į.					
								:			:					
1211	3c000 0000	Par 1 NSB		LPF	NSB	0 - 11		73H.	Сава визав	\ase :						
138	ರಿಸವಚ್ಚ ಚಿತ್ರವಾಧಿ	Par 4 USB		LPF	1.58	(500Hz THRE)			0000 0000B	End 0						
: 110	8a000 0000	Par 10 458		HPF	NSB				80000 0000	END 9:						
	Оана запав	Par 10 1,58		HPF		(Tilkt - iki(z)										
	0000 00045	Par 11 USB		IN. LEVEL				Table 29								
	Oasa saaah	Par 11 LSB		IN LEVEL									, .			
	84000,0000 84000,0000	Par 12 MSR		EF. LEVEL		0 100										•
	Oaaa aaaab	Par IL uSR				A 144							MIDS CY			
	0000 000aH	Par il USB		LF. LEVEL		0 100		,	A.T -44				*** * ****		· • • · · · · · · · · · · · · · · · · ·	
	dana aanah			BL LEVEL		S (CV		VII.	DI CAT ASSIG		iores r			100		
1130		Par 13 USB		DI. LEVEL	1.24						ORLS L			00		
*E#	0000 000aH	Har Chier	Big or B	R 71141	uec	0 110					STER L		ű	100		
11.0	PARA SAMAN	Par 15 MSB	141.2.1V	P. FINE II	watt	0 740					• • •					

```
MAY K
                                                                                            50H: Oaaa_asuaB | Par 46 LSB
                                                                                                                                         1.58
* Table 12
                                                                                            SERI COCC_CCCAB | Par 47 MSB MIDI CHT MAX L
                                                                                                                                         MSB
PITCH SHIFT
                                                                                            SFUI Dass_assa8 ( Par 47 LSB
                                                                                            68H| Qasa_saaaB | Name 1
: Address :
                                                                                             : 1
                                                                                            73HI Caas asaaB 1 Name 12
       00H: 0000_1011B : algorithm 11
                                                                                            74H1 0000_0000B | End Of Name
       01H) 0000_0000B | DUMAY
                                                                                            75H1 0000 0000B : END Of Data
                                                     MSB 0 - 2
       04H1 0000_000aB ! Par 2 MSB P.S ! MODE
                                                                                     Table 30
                                                     LSB (1 - 3)
       OSHI Oama_amamB | Par 2 LSB
                                             MODE
                                                    MSR 0 - 48
                                             PRITCH
       06H1 0000_000aB i Par 3 MSB
                                                                                                                                 I MIDI CHT MIN H. L. /MAX H. L. . .
                                                     LSB (-24-+24)
                                             PHITCH
       OTHI Casa_sassB 1 Par 3 LSB
       08H1 0000_000aB | Par 4 MS8
                                                      MSB 0 - 50
                                             FIRE
                                                                                                                                | 0 - 2450 (-2450 - +2450) |
                                                                                              MIDI CKT ASSIGN 0 1 P.S. I FIRE
                                                      1.SB (-50-+50)
       09Hl Gass_sessB t Par 4 LSB
                                             FIRE
                                             PRE DELAY MSB G - 152
       GAH: GCGG_GCCaB | Par 5 WSB
                                                                                                                                 I MIDE CKT MIN H ANT H
                                             PRE DELAY LSB (0 - 760ms)
       OBK! Gasa_asaaB | Par 5 LSB
                                                                                                             I I MASTER LEVEL
                                                                                                                                 1 0 - 100
                                                     MSB 0 - 100
       OCHI 0000_060aB : Par 6 MS8
                                             PAN
                                                                                                                                 I MIDI CHT MIN L ANAX L
                                                                                                              1
                                                      LSB
       ODNI Gaza_sasaB i Par & LSB
                                             PAN
                                                                                                                                 | DUNARY (IGNORED IF RECEIVED) |
                                                                                                              1
                                             FEEDBACK MSB 0 - 100
        OEH! 0000_000aB | Par 7 MSB
                                             FEEDBACK LSB
        OFHI Gaaa_asaaB ! Par 7 LS8
                                                      MSB 0 - 100
                                             LEVEL
        10H: 0000_000a8 : Par 8 MSB
                                                                                      ★ Table 13
                                                      LSB
                                             LEVEL
        IIH: Caaa_aaaa# ! Par & LSB
                                                                                     STEREO PITCH SHIFT
                                                      MSB 0 - 2
                                             HODE
        12H: 0000 000aB | Par 9 MSB
                                                                                      LSB (1 - 3)
                                             MODE
        1381 0aas_aaaa8 1 Par 9 LS8
                                                      MSB 0 - 48
                                                                                      Offset
                                             PHITCH
        14H: 0000 000a8 : Par to MSB
                                                                                     : Address :
                                                                                                      Description
                                             PHITCH
                                                      LSB (-24-+24)
        15H: Daga_sasaB : Par 10 LSB
                                                                                      ,.....
                                                      MSB 0 - 50
                                             FINE
        16H: 0000 000aB : Par 11 MSB
                                                                                     . ODH: 0000_1100B | algorithm 12
                                                      LSB (~50-+50)
                                             FIRE
        1781 Osan sasaB : Par II LSB
                                                                                             91H: 0000 0000B : DUMAY
                                             PRE DELAY MSB 0 - 114
        18H: 0000 000aR | Par 12 MSB
                                             PRE DELAY LSB (0 - 570ms)
        19Hi Osas_sasaB | Par 12 LSB
                                                                                                                                          MSB 0 - 24
                                                                                             04H1 0000_000aB i Par 2 MSB P.S. L PITCH
                                                      MSB 0 - 100
                                             PAR
        BAN CO GROOT BROOK ORDER LAND
                                                                                                                                          LSB (-12-+12d8)
                                                                                             05Ht Daam amamB : Par 2 LSB
                                                                                                                                 PITCH
                                                      LSB
                                             PAX
        18H! Gaza_aaaaB i Par 13 LSB
                                                                                                                                          MS8 0 - 50
                                                                                             06H: 0000_000aB : Par 3 MSB
                                                                                                                                 FINE
                                                      MSB 0 - 100
        1CH1 0000 0000B i Par 14 MSB
                                             LEVEL
                                                                                                                                          LSB (-50-+50)
                                                                                             07H! Gaas_sasaB i Par 3 LSB
                                                                                                                                 FINE
                                              LEVEL
                                                      LSB
        10H1 0000 0000B : Par 14 LSB
                                                                                             08HI 0000_000aB i Par 4 MSB
                                                                                                                                  PRE DELAY MS8 0 - 120
                                                      MSB 0 - 2
                                              300
        1EH: 0000 000a8 1 Par 15 MSB
                                    P. S 3
                                                                                                                                  PRE DELAY LSB (0 - 600ms)
                                                                                             09H: Cass sass8 ! Par 4 LSB
                                                      LSB (1 - 3)
                                              MODE
        IFH! Oaaa aaaaB | Par 15 LSB
                                                                                                                                  FEEDRACK MSB 0 - 100
                                                                                             0AH1 0000 000aB ! Par 5 MS8
                                                      M28 0 - 18
                                              PHITCH
        20Hi 0000 000aB | Par 16 M5B
                                                                                                                                  FEEDBACK LSB
                                                                                             OBBI Case_saeaB | Par 5 LSB
                                                      LSB (-24-+24)
                                              PHITCH
        718: Qaas asaa8 ! Par 16 LS8
                                                                                                                                  CROSS FB MSB 0 - 100
                                                                                             OCH! 0000_000a8 | Par 6 MSB
                                                       MSB 0 - 50
                                              FIRE
        22H: 0000 000a8 : Par 17 MSB
                                                                                             ODHI Gasa sess | Par 6 LSB
                                                                                                                                  CROSS FB LSB
                                                       LSB (-50-+50)
                                              FINE
        23H: Caaa aaaaB | Par 17 LSB
                                              PRE DELAY MSB 0 - 76
        24H: 0000 000aB 1 Par 18 MSB
                                                                                              12H1 0000_000aB + Par 9 MSB
                                                                                                                                           MSB 0 - 11
                                              PRE DELAY LSB (0 - 380ms)
        25H: 0aas_aaas8 : Par 18 LS8
                                                                                              t38: Gasa_asas8 : Par 9 LSB
                                                                                                                                  LPF
                                                                                                                                           ISR (5008z-THRU)
                                                       MSB 0 - 100
        26H; 0000 000aB ; Par 19 MSB
                                                                                                                                  HPF
                                                                                                                                           MSR 0 - 11
                                                                                              1481 0000_000a8 - Par 10 MSB
                                                       LSB.
        77H: Gasa asaa8 ! Par 19 LSB
                                              PAK
                                                                                              15HI Qaaa_saaaB ; Par 10 LSB
                                                                                                                                  HPF
                                                                                                                                           LSB (THRU-1kHz)
                                              LEVEL
                                                       MSB 0 - 100
        28H1 0000 000aB ! Par 20 MS8
                                                                                                                                  IN LEVEL MSB 0 - 100
                                                                                              16H1 0000_000a8 | Par 11 MSB
                                                       158
                                              LEVEL
        2981 Osas sasa8 : Par 20 1.58
                                                                                                                                  IN. LEVEL LSB
                                                                                              17H: Osaa assa8 : Par 11 LS8
                                                       MSB 0 - 2
                                              MODE
        24H: 0000 000aB : Par 21 MSB
                                                                                                                                  EF. LEVEL MSB 0 - 100
                                                                                              18R; 0000_000aB . Par 12 MSB
                                                       LSB (1 - 3)
                                              MODE
        28H: Gaaa aaaaB . Par 21 LSB
                                                                                                                                  EF. LEVEL LSB
                                                                                              198: Dasa_aaaaB : Par 12 LSB
                                                       MSB 0 - 48
                                              PHITCH
        2CH: 0000 000aB - Par 22 MSB
                                                                                                                                  DI. LEVEL MSB 0 - 100
                                                                                              1AH: 0000_000aB · Par 13 MSB
                                                       LSB (-24-+24)
                                              PHITCH
        20%; Qaaa aaaa8 : Par 22 LSB
                                                                                              18H: Casa_aasaB : Par 13 LSB
                                                                                                                                  DI. LEVEL LSB
                                                       MS8 0 - 50
        2FH: 0000 000aB : Par 23 MSB
                                              FINE
                                                       LSR (-50-+50)
                                              FIKE
         7FH: Gama mana8 ! Par 23 LS8
                                                                                              IEH! 0000_000a8 : Par 15 458 P.S. R ST.LINK MSB 0 - 1
                                              PRE DELAY MSB 0 - 38
        30H: 0000 000aB : Par 24 MSB
                                                                                                                                  ST. LINK LSB (OFF. ON)
                                                                                              IFH: Quas pagas : Par 15 LSB
                                              PRE DELAY USB (0 - 190ms)
         31R Gasa sasaB Par 24 LSB
                                                                                              20H: 0000 000aB Par 16 USB
                                                                                                                                  PITCH
                                                                                                                                           NSB 0 - 24
                                                       MSB 0 - 100
         32H 0000_000aB Par 25 MSB
                                              P 48
                                                                                                                                           LSB (-12--12dB)
                                                                                                                                   PITCH
                                                                                              21H- Oaza saaaB Par 15 USB
                                              PAN
                                                       LSB
         33H. Daaa_aaaaB Par 25 LSB
                                                                                                                                            MSB 0 - 50
                                                       MS8 0 - 100
                                                                                              22H 0000 000a8 Par 17 45B
                                                                                                                                  FINE
                                              LEVEL
         34H: 0000 000aB : Par 26 MSB
                                                                                                                                            LSB (-50--50)
                                                                                              23H Casa sasaB Par 17 LSB
                                                                                                                                  FINE
                                              LEVEL
                                                       LSB
         35H. Qaaa aaaaA | Pac 26 LSB
                                                                                                                                   PRE DELAY MSB 0 - 126
                                                        M28 0 - 10
                                                                                              24H: 0000 000a8 Par 18 45B
         36H: 0000 000aB . Par 27 MSR P.S
                                              1 PF
                                                                                                                                   PRE DELAY LSB (0 - 600ms)
                                                                                              25H: Gasa aasaB Par LB LSB
                                                        LSB (500Hz-THRE)
                                              LPF
         37M: Daga agag8 : Par 27 LSB
                                                                                                                                   FEEDBACK MSB 0 - 100
                                                                                              26H: 0000 000aB Par 19 WSB
                                               HPF
                                                        HSB 0 - EI
         388: 0000 000aB - Par 28 WSB
                                                                                                                                   FEEDBACK LSB
                                                                                              27H Owaa aaauB Par 19 LSB
                                                        LSB (THRU-INRZ)
                                              HPF
         39H: Casa_assa . Par 28 LSB
                                                                                                                                   CROSS FB WSB 0 - 100
                                                                                              28H 0000 000aB Par 20 45B
                                                                                                                                   CROSS FB LSB
                                                                                              29H Gaga gaaaB Par 20 LSB
         40H: 0000_000aB Par 32 WSB DIRECT LEVEL L WSB 0 - 100
                                                                                                                                            WSB 0 - IL
                                                                                                                                   LPF
                                                                                              24K, 0000 000aB Par 21 MSB
                                               LEVEL L LSB
         41H: Gaaa aaaaB : Par 32 LSR
                                                                                                                                   LPF
                                                                                                                                            LSB (500Hz-THRU)
                                                                                              28H: 0aaa_aasa8 Par 21 LSB
                                                        MSB 0 - 100
         42H 0000 000aB Par 33 MSB
                                               LEYEL R
                                                                                                                                            MSB 0 - 11
                                                                                                                                   HPF
                                                                                              2CH: 0000 000aB Par 22 45B
                                               LEVEL R LSB
         43H Qaaa_aaaa8 . Par 33 LS8
                                                                                                                                           LSB (THRU-IKHZ)
                                                                                                                                   RPF
                                                                                              2DH Gaas_aaaa8 Par 22 LSB
                                                                                              2EH 0000_000a8 Par 23 MSB
                                                                                                                                   IN LEVEL MSB 0 - 100
                                                        WSB 0 - 100
         488: 0000_000aB - Par 36 WSB WASTER LEVEL
                                                                                                                                   EX. LEVEL LSB
                                                                                              2FH: Qaaa aaaaB Par 23 LSB
                                                        LSB
         1911 Daga agaaB Par 36 LSB
                                               LEVEL
                                                                                                                                   EF. LEVEL MSB 0 100
                                                                                              30H 0000 000a8 Par 24 W58
                                                                                              318: Casa asaaB Par 24 LSB
                                                                                                                                   FF | FVF1 LSB
          50H 0000 000aB Par 40 MSH MIDLEST RECEIVE MSB 9 66
                                                                                                                                   DILLEVEL WSB 0 - 100
                                                                                              3281 0000 000aB Par 25 MSB
         51H Oaan amamb Par 40 LSH
                                               RECEIVE LSB
                                                                                              33H Casa asaaB Par 25 LSB
                                                                                                                                   DI. LEVEL LSH
                                                     (OFF, AF, TOLCH, P. BEND. .
                                                      en - 231, 264 2951
                                                                                                                                            VISB 0 - 100
                                                                                               36H GOOD GOODS Par 27 458 WASTER LEVEL
                                                                                                                                            1.58
                                                                                                                                   LEVEL
                                                                                               178: Casa sasaB Par 27 LSR
          54H 0000_000aB . Par 42 MSB - MIDI CXT ASSIGN - WSB - 0 - 1
                                               ASSIGN 1.SB
          55H Gaaa aaaaB Par 42 LSB
                                                                                               40H 0000 000AB Par 32 MSB MIDI CXT RECEIVE MSB 0 - 66
                                                                                                                                   RECEIVE LSB
                                                                                               41H Gasa aaaaB Par 32 LSB
          588: 0000_000a8 | Par 44 MSR | MiDI CXT MIN R
                                                        usn
                                                                    Table 30
                                                                                                                                          IOFF AF, TOLCH, P. REND.
          59H. Gaza asaasi Par 44 LSB
                                               M13 8
                                                        LSB
                                                                                                                                           en - e31 #54 · #95)
                                       WIDE CAT WIN L
                                                        uss
          54H 0000 000aB Par 45 USB
                                                        LSH
                                               WIS L
          SRE Oaaa aaaa8 Par to LSB
                                                                                               48H 0000 000#B Par 35 WSH WEDI CXT ASSIGN WSB 0 - 1
                                                                                               498 Олжа валав Раг 36 LSR
                                                                                                                                    ASSIGN
                                                                                                                                           LSB
          SCH: 0000 0000B Par 46 MSB MIDI CAT MAX H
                                                        usa
```

	i 11 0000 000=0	 Dec 40 USD	uzhi eus		uen		* Table 15							
	1: 0000_000aB		MIDI CN		MSB LSB	Table311	STEREO PI	1ASER				·		_
	11 0000_000aB			MIN L	M28	ŧ	l Offset _i l							
	Hessa_sess0				LS8	1	i Address (Descri	pt ion					
	11 0000_000aB		MIDI CAT		MS8	1								·
	1: 0000_000a8				MZB	i ,		0000_1110B		14				
	i Gasa_asasB				LSB	,		4000_44004						
	•	:				1	i 04H!	0000_000aB		PHASER	MODE	328	0 - 3	
	i Oaaa_aaaaB					i		Cana_aaaaB			MODE		(1 - 4)	
: :		: :				į.		0000_000aB			RATE	MS8	0 - 100	0
	88888_8880 !! 80000_0000					į ,		Gasa_sasaG			RATE	LSB		
	1 0000_0000B					1		8e000_0000 8eese_ees0			DEPTH		0 - 100	0
	**							0000_000aB			DEPTH MANUAL	LSB WSB	0 - 100	n
Table 31								Oaas_asasB			MANUAL	LSB		•
,								0000_000aB			RESONANC		0 - 100	0
					MIN N.L / M			Ossa_aaaaB			RESONANC			
	IIDI CNT ASSIG	**************************************			/	i		0000_000aB			MOD. PHAS		0 - 180	0
				1 0 - 12	150 (-1250 -	*12507	; OFH!	Ossa_sassB	Par 7 LSB		MOD. PHAS	E LSB		
					MEN E / MAX		1287	0000_000a8	Par Gusp	MICTED	1 EVE1	uen	0 - 100	n
		I : MASTER (0 - 10		1		Cass_ssss			LEVEL	158	0 - 100	u
				1 MEDI CAT	MIN L /MAX							240		
		:		I DUMBRY (I	GNORED IF RE	CETVED)	· LEH!	0000_000aB	Par 15 MSB	MIDI CX	RECEIVE	KSB	0 - 66	
								Qaza_azaaB (Par 15 LSB		RECEIVE	LSB		
* Table 14	t.												. TOUCH, F	
* Lable 14 STEREO FI								!				=0 - =	31.=64	- =95}
FI		*		*****			21UI .	ስርበበ በተሰ ተ ድ ፣	Par 31 Urn	tibi ce	r iceim	Hee	0 - 4	
Offset						i		Gass_ses0			ASSIGN	LSB	0 - 2	
Address	Descri	ption				ì		A000_00000			VOSIAN	170		
								0000_000aB		MIDI CX	THIN	MSB	0 - 100	Table33
	0000_1101B		3			:	. 3781	Оала_алла 🖟			MIN	LSB		
018	# 0000_0000B					ì								
A48	0005 000-B	•	CI APACO	unbe		1		0000_000aB 1					0 - 100	J
	0000_000a8 0aaa_aaaa8		FLANGER		MSB 0 - 1 LSB (1,2)	1		Casa_sasaB :	Par 32 LSB		YAX	ĻSB		
	: 0000_000aB				MSB 0 - 100	:		Сави_ававВ .	Same 1					
	Bass assaB				LSB		• • • • • • • • • • • • • • • • • • •		Adme ;					
	6000_000aB				4SB 0 - 100			Oaaa_aaaaB '	Name 17					
	: Caza_aaaa8				LSB	;		9000_00008		•				
	Be000_0000B				MSB 0 - 100	•		0000_0000B 1						
	. Саан_ваааВ :				LSB	i								
	: 0000_000aB				M2B 0 - 100	•	Table 33							
	: 0aaa_aaaa6 :	LBL 0 778		RESUNANCE	T2R	:								
OFA:				BAU DEFEE A										
	: 0000_000a8	Par 7 MSB			MSB 0 - 180		1				MIDE C	XI HIX		
		Par 7 MSB Par 7 LSB		NOD. PHASE I	MSB 0 - 180	:	,				#1D1 C	XI HIX		
OFH. 12H:	: 0000_000a8; : 0aaz_aaaa8 : 0000_000a8;	Par 7 MSB Par 7 LSB Par 9 MSB	GATE	NOD. PHASE	MSB 0 - 180		, , , , ,	OF CAT ASSIGN	0 · PRASER	RATE DEPTH	#1D1 C	XT WIX.		
OFH, 128: 138:	: 0000_000a8 ; . 0aaa_aaaa8 ; . 0000_000a8 ; . 0000_000a8 ;	Par 7 MSB Par 7 LSB Par 8 MSB Par 9 LSB	GATE	WOD. PHASE OX/OFF OX/OFF	MSB 0 - 180 LSB MSB 0 - 1 LSB (OFF, 0%)	: :	, , , , ,	OF CAT ASSIGN	0 · PRASER	RATE DEPTH	#1D1 C	XT WIX.		
OFH. LZH: L3H! L4H.	: 0000_000a8 ; 0aaa_aaa8 ; 0000_000a8 ; 0000_000a8 ; 0aaa_aaaa8 ; 0000_000a8 ; 0000_000a8 ;	Par 7 MSB Par 7 LSB Par 9 MSB Par 9 LSB Par 10 MSB	GATE	NOD. PHASE ON/OFF OX/OFF RATE	MSB 0 - [80 LSB MSB 0 - 1 LSB (OFF, OX) MSB 0 - 100		, , , , ,	OI CNT ASSIGN	0 · PRASER	RATE DEPTH	#1D1 C	XT WIX.		
OFH. 128: 138: 148:	: 0000_000a8 ; . 0aaa_aaaa8 ; . 0000_000a8 ; . 0000_000a8 ;	Par 7 MSB Par 7 LSB Par 9 MSB Par 9 LSB Par 10 MSB	GATE	NOD. PHASE ON/OFF OX/OFF RATE	MSB 0 - 180 LSB MSB 0 - 1 LSB (OFF, 0%)		ALE	OF CAT ASSIGN	0 · PRASER	RATE DEPTH	#1D1 C	XT WIX.		
0FH. 12H! 13H! 14H. 15H	. 0000_000a8 . 0aaa_aaaa8 . 0000_000a8 . 0000_000a8 . 0000_000a8	Par 7 MSB Par 7 LSB Par 9 MSB Par 9 LSB Par 10 MSB Par 10 LSB		UN/OFF ! OX/OFF ! OX/OFF ! RATE !	MSB 0 - [80 LSB MSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB	:	#Table 18	OI CNT ASSIGN	0 · PRASER	RATE DEPTH	#1D1 C	XT WIX.		
OFH, 12H; 13H; 14H; 15H;	0000_0008 0aaa_aaa8 0000_0008 0aaa_aaa8 0000_0008	Par 10 USB		UN/OFF STATE TRATE TERMENTE STATE ST	MSB 0 - 180 LSB MSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB	:	ALE	DE CNT ASSEGN	0 · PHASER I : PHASER 2 : MASTER	RATE DEPTH	#1D1 C	XT WIX.		
OFH, 12H; 13H; 14H; 15H;	. 0000_000a8 . 0aaa_aaaa8 . 0000_000a8 . 0000_000a8 . 0000_000a8	Par 10 USB		WOD. PHASE ON/OFF ON/OFF RATE RATE LEVEL	MSB 0 - [80 LSB MSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB	:	* Table 16	DE CNT ASSEGN	0 · PHASER I : PHASER 2 : MASTER	RATE DEPTH	#1D1 C	XT WIX.		
0FH- 12H: 13H: 14H- 15H: 4EH 4FH	0000_000a8 0aaa_aaaa8 0000_000a8 0aaa_aaaa8 0000_000a8 0aaa_aaaa8 0000_000a8	Par 7 MSB Par 7 LSB Par 9 MSB Par 9 MSB Par 10 MSB Par 10 LSB Par 15 MSB Par 15 MSB Par 15 MSB Par 21 MSB		WOD. PHASE ON/OFF OX/OFF RATE RATE LEVEL LEVEL	MSB 0 - 180 LSB MSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB	:	* Table 16	DE CNT ASSEGN	0 · PHASER I : PHASER 2 : WASTER	RATE DEPTH	#1D1 C	XT WIX.		
0FH- 12H: 13H: 14H- 15H: 4EH 4FH	0000_000a8 0aaa_aaaa8 0000_000a8 0aaa_aaaa8 0000_000a8 0aaa_aaaa8 0000_000a8 0aaa_aaaa8	Par 7 MSB Par 7 LSB Par 9 MSB Par 9 MSB Par 10 MSB Par 10 LSB Par 15 MSB Par 15 MSB Par 15 MSB Par 21 MSB	WASTER	NOD. PHASE ON/OFF ON/OFF RATE RATE LEVEL LEVEL RECEIVE RECEIVE	MSB 0 - 180 LSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB 0 - 100 LSB USB 0 - 66 LSB USB 0 - 66	i i : : : :	* Table 16 VOCODER Offset Address	Descrip	0 · PHASER I : PHASER 2 : WASTER	RATE DEPTH LEVEL	#1D1 C	XT WIX.		
0FH- 12H: 13H: 14H- 15H: 4EH 4FH	0000_000a8 0aaa_aaaa8 0000_000a8 0aaa_aaaa8 0000_000a8 0aaa_aaaa8 0000_000a8	Par 7 MSB Par 7 LSB Par 9 MSB Par 9 MSB Par 10 MSB Par 10 LSB Par 15 MSB Par 15 MSB Par 15 MSB Par 21 MSB	WASTER	NOD. PHASE ON/OFF OX/OFF RATE RATE LEVEL LEVEL RECEIVE RECEIVE GOFT	MSB 0 - 180 LSB (OFF, OX) MSB 0 - 100 LSB - 100 LSB - 100 LSB - 66 LSB - 66 LSB - 66	BEND.	* Table 16 VOCODER Offset Address	Descrip	0 · PHASER I : PHASER 2 : WASTER	RATE DEPTH LEVEL	#1D1 C	XT WIX.		
0FH- 12H: 13H: 14H- 15H: 4EH 4FH	0000_000a8 0aaa_aaaa8 0000_000a8 0aaa_aaaa8 0000_000a8 0aaa_aaaa8 0000_000a8	Par 7 MSB Par 7 LSB Par 9 MSB Par 9 MSB Par 10 MSB Par 10 LSB Par 15 MSB Par 15 MSB Par 15 MSB Par 21 MSB	WASTER	NOD. PHASE ON/OFF OX/OFF RATE RATE LEVEL LEVEL RECEIVE RECEIVE GOFT	MSB 0 - 180 LSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB 0 - 100 LSB USB 0 - 66 LSB USB 0 - 66	BEND.	* Table 16 VOCODER Offset Address	Descrip	0 · PHASER 1 · PHASER 2 · MASTER	RATE DEPTH LEVEL	#1D1 C	XT WIX.		
0FH- 12H: 13H: 14H- 15H: 3EH: 3FH: 2AH: 2BH:	0000_000a8	7 ASB 7 Par 7 LSB 1 Par 9 LSB 2 Par 10 LSB 2 Par 10 LSB 2 Par 10 LSB 3 Par 15 LSB 4 Par 15 LSB 4 Par 21 LSB	MASTER MIDI CAT	ON/OFF SON/OFF	MSB 0 - 180 LSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB USB 0 - 100 LSB USB 0 - 66 LSB USB 0 - 66 LSB USB 0 - 66 LSB USB 0 - 66	BEND.	* Table 16 VOCODER Offset Address OOH	Descrip 0000_lillB 0000_000B	0 · PHASER I : PRASER 2 : WASTER tion algorithm I	RATE DEPTH LEVEL	#ID! C	NT MIN. 100 100 100		
0FH- 12H: 13H: 14H- 15H: 3EH: 4FH 2AH: 2BH-	0000_000a8	7 MSB 7 Par 7 LSB 1 Par 9 LSB 1 Par 10 LSB 1 Par 10 LSB 1 Par 15 LSB 1 Par 15 LSB 1 Par 21 LSB	MASTER MIDI CAT	WOD. PRASE ON/OFF ! ON/OFF ! RATE ! RATE ! LEVEL ! LEVEL ! RECEIVE ! OFF	MSB 0 - 180 LSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB 0 - 100 LSB 0 - 66 LSB - 66 LSB - 66 LSB - 66 LSB - 66 LSB - 66 LSB - 7 MSB 0 - 66 LSB - 7 MSB 0 - 66 LSB - 7 MSB 0 - 66	BEND.	* Table 16 VOCODER Offset Address ON OH OTH	Descrip 0000_11119 0000_0008	0 · PHASER I : PRASER 2 : MASTER tion tion algorithm I DUNN Par 2 458	RATE DEPTH LEVEL	ui Df C - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -	XT MIX. 100 100 100		
0FH- 12H: 13H: 14H- 15H: 3EH: 4FH 2AH: 2BH-	0000_000a8	7 ASB 7 Par 7 LSB 1 Par 9 LSB 1 Par 10 LSB 1 Par 10 LSB 1 Par 10 LSB 1 Par 15 LSB 1 Par 15 LSB 1 Par 21 LSB 1 Par 21 LSB 1 Par 21 LSB	MASTER MIDI CAT	WOD. PRASE ON/OFF ! ON/OFF ! RATE ! RATE ! LEVEL ! LEVEL ! RECEIVE ! OFF	MSB 0 - 180 LSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB USB 0 - 100 LSB USB 0 - 66 LSB USB 0 - 66 LSB USB 0 - 66 LSB USB 0 - 66	BEND.	* Table 16 VOCODER Offset Address OH THE	Descrip 0000_11119 0000_0008	O · PHASER I : PHASER 2 : MASTER tion algorithm I DUMP Par 2 458 Par 2 LSH	RATE DEPTH LEVEL	MID: C 0 - 0 - 0 -	100 100 100 100	0 - 300)
0FH- 12B: 13B: 14B- 15B: 15B: 15B: 2AB: 2BB: 36B: 37B	0000_000a8	Par 7 MSB Par 7 LSB Par 9 MSB Par 10 MSB Par 10 MSB Par 15 MSB Par 15 LSB Par 21 MSB	MASTER MIDI CXT	WOD. PHASE ON/OFF RATE RATE LEVEL LEVEL RECEIVE OF ASSIGN ASSIGN I	MSB 0 - 180 LSB MSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB WSB 0 - 100 LSB MSB 0 - 66 LSB F, AF, TOUCH, P =31, =54 - MSB 0 - 4 LSB	BEND. =95}	* Table 16 VOCODER Offset Address OH GH: G49 G5H: G6H.	Descrip Descrip 0000 [1119 0000_0000B 0000_0000B 0000_0000B	0 · PHASER 1 ; PHASER 2 ; MASTER tion tion algorithm 1 DUMP Par 2 458 Par 2 LSB Par 3 458	RATE DEPTH LEVEL	VO. CHR.	1 141 X. 100 100 100 100 100 1 LSB 1 LSB 2 VSB	0 - 300)
0FH- 12B: 13B: 14B- 15B: 15B: 15B: 2AB: 2BB: 36B: 37B	0000_000a8	7 MSB 7 Par 7 LSB 1 Par 9 LSB 2 Par 10 MSB 1 Par 10 LSB 2 Par 15 MSB 2 Par 15 LSB 4 Par 21 LSB 4 Par 21 LSB 4 Par 27 LSB	MASTER MIDI CAT	WOD. PRASE ON/OFF ON/OFF RATE RATE LEVEL LEVEL LEVEL GOFF ASSIGN WIX STATE ON/OFF ON/	MSB 0 - 180 LSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB 0 - 100 LSB 0 - 66 LSB - 66 LSB - 66 LSB - 66 LSB - 66 LSB - 66 LSB - 7 MSB 0 - 66 LSB - 7 MSB 0 - 66 LSB - 7 MSB 0 - 66	BEND.	* Table 16 VOCODER Offset Address OH- SIH- GAN GGH- GGH- GGH- GGH- GGH- GGH- GGH- GGH	Descrip 0000_11119 0000_00008 0000_00008 0000_00008 0000_00008 0000_00008	O PHASER I PRASER 2 WASTER LION LION Algorithm I DUNN Par 2 W58 Par 3 U58 Par 3 U58	RATE DEPTH LEVEL	VO. CHR. VO. CHR. VO. CHR. VO. CHR.	100 100 100 100 100 1 LSB 1 LSB 2 LSB 2 LSB	0 - 100))
0FH- 12B: 13H- 14H- 15H- 3EH 2AH 2BH- 36H 37H	0000_000a8	7 MSB 7 Par 7 LSB 1 Par 9 LSB 2 Par 10 MSB 1 Par 10 LSB 2 Par 15 MSB 2 Par 15 LSB 4 Par 21 LSB 4 Par 21 LSB 4 Par 27 LSB	MASTER MIDI CXT	WOD. PRASE ON/OFF ON/OFF RATE RATE LEVEL LEVEL LEVEL GOFF ASSIGN WIX STATE ON/OFF ON/	MSB 0 - 180 LSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB 0 - 100 LSB 0 - 66 LSB 0 - 66 LSB - 231, 254 - 4 MSB 0 - 4	BEND. =95}	* Table 16 VOCODER Offset Address ON OH OTH OTH OTH OTH	Descrip 0000 [1119 0000 00085 0000 00085 0000 0008 0000 0008	O · PHASER I : PRASER 2 : MASTER LION LION LION Par 2 458 Par 2 458 Par 3 458 Par 3 458 Par 4 458	RATE DEPTH LEVEL	WID: CO - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -	100 100 100 100 100 1 L5B 2 L5B 2 L5B 2 L5B 3 N5B	0 - 100))
0FH- 12B: 13H: 14H- 15H: 3EH 3FH 2AH 2BH 36W 37H 40H 41H	0000_000a8	Par 7 MSB Par 7 LSB Par 9 MSB Par 10 MSB Par 10 MSB Par 15 MSB Par 15 LSB Par 21 MSB Par 27 MSB Par 27 LSB Par 32 MSB Par 36 MSB	MASTER MIDI CXT	WOLD PHASE ON/OFF ON/OFF ON/OFF ON/OFF RATE ON/OFF	MSB 0 - 180 LSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB 0 - 100 LSB 0 - 66 LSB 0 - 66 LSB - 231, 254 - 4 MSB 0 - 4	BEND. =95}	* Table 16 VOCODER Offset Address OH	Descrip 0000_11119 0000_00008 0000_00008 0000_00008 0000_00008 0000_00008	O PHASER I PRASER 2 WASTER LION LION Algorithm I DUNN Par 2 W58 Par 3 U58 Par 3 U58	RATE DEPTH LEVEL	VO. CHR. VO. CHR. VO. CHR. VO. CHR. VO. CHR. VO. CHR.	100 100 100 100 100 100 100 100 100 100	0 - 100 0 - 100 9 - 100))
0FH- 12H: 13H1 14H- 15H 2FH 2AH 28H 36H 37H	0000_000a8	Par 7 MSB Par 7 LSB Par 9 MSB Par 10 MSB Par 10 MSB Par 15 MSB Par 15 LSB Par 21 MSB Par 27 MSB Par 27 LSB Par 32 MSB Par 36 MSB	MASTER MIDI CAT MIDI CAT	WOD. PRASE ON/OFF	MSB 0 - 180 LSB MSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB WSB 0 - 100 LSB MSB 0 - 66 LSB F, AF, TOUCH, P =31, =54 - WSB 0 - 4 LSB MSB 0 - 4 LSB	BEND. =95}	* Table 16 VOCODER Offset Address OH SIN: GAN	Descrip Octoo 11119 Octoo 00008 Octoo 0008 Octo	O · PHASER I : PHASER 2 : MASTER LION LION Par 2 458 Par 2 LSB Par 3 LSB Par 3 LSB Par 4 458 Par 4 LSB	RATE DEPTH LEVEL	WID: CO - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -	I 458 I 458 I 58 I 58 I 58 I 58 I 58 I 58 I 58 I	0 - 100 0 - 100 9 - 100))
0FH- 12H: 13H: 14H- 15H: 3EH 3FH 2AH: 2BH- 36H: 37H 40H 41H	0000_000a8	Par 7 MSB Par 7 LSB Par 9 LSB Par 10 MSB Par 10 LSB Par 15 MSB Par 15 LSB Par 21 LSB Par 21 LSB Par 27 LSB Par 27 LSB Par 27 LSB Par 32 MSB Par 32 MSB Par 36 MSB Par 36 MSB Par 36 MSB	MASTER MIDI CAT MIDI CAT	WOD. PRASE ON/OFF	MSB 0 - 180 LSB (OFF, OX) MSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB USB 0 - 66 LSB USB 0 - 66 LSB F, AF, TOUCH, P311. = 54 - 1 MSB 0 - 4 LSB USB 0 - 4	BEND. =95}	* Table 16 VOCODER Offset Address ON OTH OTH OTH ON ON OTH OTH ON ON ON OTH	Descrip 0000 [1119 0000 0008 0000 0008	0 · PHASER 1 : PHASER 2 : MASTER LION LION Algorithw DUMP Par 2 458 Par 2 L58 Par 3 458 Par 3 458 Par 4 458 Par 4 458 Par 4 558 Par 5 458	RATE DEPTH LEVEL	VO. CHR. VO.	I 458 I 458 I 58 I 58 I 58 I 58 I 58 I 58 I 58 I	0 - 100 0 - 100 9 - 100))
0FH- 12H: 13H1 14H- 15H 2EH 3FH 28H. 36W 37H 40H 41H 48H 49H	0000_000a8	Par 7 MSB Par 7 LSB Par 9 LSB Par 10 MSB Par 10 LSB Par 15 MSB Par 15 LSB Par 21 LSB Par 21 LSB Par 27 LSB Par 27 LSB Par 27 LSB Par 36 MSB Par 36 MSB Par 36 MSB	MASTER MIDI CAT MIDI CAT	WOD. PRASE ON/OFF	MSB 0 - 180 LSB (OFF, OX) MSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB USB 0 - 66 LSB USB 0 - 66 LSB F, AF, TOUCH, P311. = 54 - 1 MSB 0 - 4 LSB USB 0 - 4	BEND. =95}	* Table 16 VOCODER Offset Address OH	Descrip ODO 11119 0000 0008 0000 0008 0000 0008 0000 0008 0000 0008 0000 0008 0000 0008 0000 0008 0000 0008	0 · PHASER 1 : PHASER 2 : MASTER LION LION Algorithw DUMP Par 2 458 Par 2 L58 Par 3 458 Par 3 458 Par 4 458 Par 4 458 Par 4 558 Par 5 458	RATE DEPTH LEVEL	VO. CHR. VO.	100 100 100 100 100 100 100 100 100 100	0 - 100 0 - 100)
0FH- 12H: 13H1 14H- 15H 2AH 2BH 36H 37H 40H 41H 48H 49H	0000_000a8	Par 7 MSB Par 7 LSB Par 9 MSB Par 10 MSB Par 10 MSB Par 15 MSB Par 15 LSB Par 21 MSB Par 21 MSB Par 21 MSB Par 21 MSB Par 21 LSB Par 27 LSB Par 27 LSB Par 32 MSB Par 32 LSB Par 36 MSB	MASTER MIDI CAT MIDI CAT	WOD. PRASE ON/OFF	MSB 0 - 180 LSB (OFF, OX) MSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB USB 0 - 66 LSB USB 0 - 66 LSB F, AF, TOUCH, P311. = 54 - 1 MSB 0 - 4 LSB USB 0 - 4	BEND. =95}	* Table 18 VOCODER Offset Address OH EIN: OH	Descrip 0000 [1:119 0000 00008 0000 00008 0000 00008 0000 00008 0000 0008 0000 0008 0000 0008 0000 0008 0000 0008	0 - PHASER 1 : PHASER 2 : MASTER LION LION Par 2 VSB Par 3 VSB Par 3 VSB Par 4 VSB Par 4 VSB Par 5 VSB Par 5 VSB Par 5 VSB Par 9 LSB	RATE DEPTH LEVEL	VO. CHR.	100 100 100 100 100 100 100 100 100 100	0 - 100 0 - 100 0 - 100 0 - 100)
0FH- 12H: 13H1 14H- 15H 1EH 1FH 2AH 28H- 36H 37H 40H 41H 48H 49H	0000_000a8	Par 7 MSB Par 7 LSB Par 9 MSB Par 10 MSB Par 10 MSB Par 15 MSB Par 15 MSB Par 21 MSB Par 21 MSB Par 27 LSB Par 27 USB Par 27 USB Par 27 USB Par 32 MSB Par 32 MSB Par 32 MSB Par 32 MSB Par 36 MSB	MASTER MIDI CAT MIDI CAT	WOD. PRASE ON/OFF	MSB 0 - 180 LSB (OFF, OX) MSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB USB 0 - 66 LSB USB 0 - 66 LSB F, AF, TOUCH, P311. = 54 - 1 MSB 0 - 4 LSB USB 0 - 4	BEND. =95}	* Table 16 VOCODER Offset Address OH- OH- OH- OH- OH- OH- OH- OH- OH- OH	Descrip 0000_0000B 0000_0000B 0000_0000B 0000_0000B 0000_0000B 0000_0000B 0000_0000B 0000_0000B 0000_0000B	0 - PHASER 1 : PRASER 2 : MASTER 2 : MASTER DUMN Par 2 MSB Par 3 MSB Par 3 MSB Par 4 MSB Par 4 MSB Par 3 MSB Par 5 MSB Par 5 MSB Par 5 MSB Par 6 MSB Par 16 MSB Par 16 MSB	RATE DEPTH LEVEL	VO. CHR. VO.	1 958 1 100 100 100 100 100 100 100 100 100 1	0 - 100 0 - 100 0 - 100 0 - 100)))
0FH- 12H: 13H1 14H- 15H 15H 28H 28H 36W 37H 40H 41H 48H 49H 58H :	0000_000a8	Par 7 MSB Par 7 LSB Par 9 LSB Par 10 MSB Par 10 LSB Par 15 MSB Par 15 LSB Par 21 LSB Par 32 LSB Par 36 MSB Par 36 LSB Par 36 LSB Par 36 LSB	MASTER MIDI CAT MIDI CAT	WOD. PRASE ON/OFF	MSB 0 - 180 LSB (OFF, OX) MSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB USB 0 - 66 LSB USB 0 - 66 LSB F, AF, TOUCH, P311. = 54 - 1 MSB 0 - 4 LSB USB 0 - 4	BEND. =95}	* Table 16 VOCODER Offset Address ON OTH OTH OTH OTH OTH OTH INITIAL	Descrip 0000 [1119 0000 0000B 0000 000B	0 - PHASER 1 : PRASER 2 : MASTER 2 : MASTER DUON Par 2 458 Par 3 458 Par 3 458 Par 4 458 Par 3 458 Par 4 458 Par 5 458 Par 5 458 Par 6 458 Par 6 458 Par 6 458 Par 10 458 Par 10 458	RATE DEPTH LEVEL	VO. CHR. VO.	1 MSH 100 100 100 100 100 100 1 MSH 1 LSH 2 LSH 3 LSH 4 LSH 4 LSH 4 LSH 5 MSH 6 MSH 7 MSH 8 MSH	0 - 100 0 - 100 0 - 100 0 - 100 0 100)))
0FH- 12H: 13H1 14H- 15H 2EH 3FH 28H. 36W 37H 40H 41H 48H 49H 58H :	0000_000a8	Par 7 MSB Par 7 LSB Par 9 LSB Par 10 MSB Par 10 LSB Par 15 MSB Par 15 LSB Par 21 LSB Par 32 LSB Par 36 MSB Par 36 LSB Par 36 LSB Par 36 LSB	MASTER MIDI CAT MIDI CAT	WOLD PHASE ON/OFF ON/OFF RATE ON/OFF RATE ON/OFF O	MSB 0 - 180 LSB (OFF, OX) MSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB USB 0 - 66 LSB USB 0 - 66 LSB F, AF, TOUCH, P311. = 54 - 1 MSB 0 - 4 LSB USB 0 - 4	BEND. =95}	* Table 16 VOCODER Offset Address OH	Descrip Descrip ODO 11119 ODO 0008	0 - PHASER 1 : PHASER 2 : MASTER 2 : MASTER 2 : MASTER 2 : MSER 2 : MSER 4 : 2 : MSER 4 : 3 : MSER 5 : 4 : MSER 6 : 4 : MSER 6 : 4 : MSER 7 : 5 : MSER 7 : 1 : MSER	RATE DEPTH LEVEL	VO. CHR.	1 MS8 1 LS8 1 LS8 2 US8 3 US8 3 US8 3 US8 4 US8 4 US8 5 US8 5 US8 5 US8 5 US8 6 US8 7 US8	0 - 100 0 - 100 0 - 100 0 - 100 0 100)))
0FH- 12H: 13H1 14H- 15H 2AH 2BH 37H 40H 41H 48H 49H 58H 73H 73H	0000_000a8	Par 7 MSB Par 7 LSB Par 9 LSB Par 10 MSB Par 10 LSB Par 15 MSB Par 15 LSB Par 21 LSB Par 32 LSB Par 36 MSB Par 36 LSB Vame 1 LSB	MASTER MIDI CAT MIDI CAT	WOLD PHASE ON/OFF ON/OFF RATE ON/OFF RATE ON/OFF O	MSB 0 - 180 LSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB 0 - 100 LSB 0 - 100 LSB 0 - 66 LSB MSB 0 - 66 LSB MSB 0 - 64 LSB MSB 0 - 4 LSB	BEND. =95}	* Table 16 VOCODER Offset Address OH - 018: G48 G5H - 066. O7H - 088, O9H - 09H - 128: 148 - 158: 148 - 158: 166. 178	Descrip 00000 [1:119 00000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008	0 - PHASER 1 : PRASER 2 : MASTER 2 : MASTER LION Algorithm DUMM Par 2 MSB Par 3 MSB Par 3 MSB Par 3 LSB Par 4 MSB Par 4 MSB Par 5 MSB Par 6 MSB Par 10 MSB Par 10 MSB Par 10 MSB Par 10 MSB Par 11 MSB Par 11 MSB Par 11 MSB Par 11 MSB	RATE DEPTH LEVEL	VO. CHR.	1 MIM. 100 100 100 100 100 100 100 100 100 10	0 - 100 0 - 100 0 - 100 0 100 0 100 9 100	
0FH- 12H: 13H1 14H- 15H 2AH 2BH 37H 40H 41H 48H 49H 58H 73H 73H	0000_000a8	Par 7 MSB Par 7 LSB Par 9 LSB Par 10 MSB Par 10 LSB Par 15 MSB Par 15 LSB Par 21 LSB Par 32 LSB Par 36 MSB Par 36 LSB Vame 1 LSB	MASTER MIDI CAT MIDI CXT MIDI CXT	WOLD PHASE ON/OFF ON/OFF RATE ON/OFF RATE ON/OFF O	MSB 0 - 180 LSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB 0 - 100 LSB 0 - 100 LSB 0 - 66 LSB MSB 0 - 66 LSB MSB 0 - 64 LSB MSB 0 - 4 LSB	BEND. =95}	# Table 16 VOCODER Offset Address OOH	Descrip 0000_0000B	0 - PHASER 1 : PRASER 2 : MASTER 2 : MASTER LION algorithm DUMP Par 2 MSB Par 3 MSB Par 3 MSB Par 4 MSB Par 3 MSB Par 4 MSB Par 5 MSB Par 6 MSB Par 10 MSB Par 10 MSB Par 10 MSB Par 11 MSB	RATE DEPTH LEVEL	VO. CHR. KO. CHR. CHR. CHR. CHR. CHR. CHR. CHR. CHR	1 MS8 1 MS8 1 MS8 2 US8 3 US8 2 US8 3 US8 3 US8 4 US8 4 US8 4 US8 5 US8 5 US8 5 US8 5 US8 6 US8 6 US8 6 US8 7 US8 VS8	0 - 100 0 - 100 0 - 100 0 - 100 0 100	
0FH- 12BH 13H1 14BH 15H1 24H1 25H1 26H1 36H1 37H1 40H1 41H1 48H1 49H1 58H1 77H1 77H1 77H1 77H1 77H1 77H1	0000_000a8	Par 7 MSB Par 7 LSB Par 9 LSB Par 10 MSB Par 10 LSB Par 15 MSB Par 15 LSB Par 21 LSB Par 32 LSB Par 36 MSB Par 36 LSB Vame 1 LSB	MASTER MIDI CAT MIDI CXT MIDI CXT	WOD. PHASE OX/OFF OX/OFF RATE RATE LEVEL LEVEL RECEIVE OFF ASSIGN MIX	MSB 0 - 180 LSB 0 - 1 LSB (OFF. OX) MSB 0 - 100 LSB 0 - 100 LSB 0 - 66 LSB MSB 0 - 66 LSB F. AF. TOUCH, P 231. =64 - MSB 0 - 4 LSB MSB 0 - 4 LSB MSB NSB LSB	BEND. =95}	# Table 16 VOCODER Offset Address OOH	Descrip 00000 [1:119 00000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008	0 - PHASER 1 : PRASER 2 : MASTER 2 : MASTER LION Algorithm DUMM Par 2 MSB Par 3 MSB Par 3 MSB Par 3 LSB Par 4 MSB Par 4 MSB Par 5 MSB Par 6 MSB Par 10 MSB Par 10 MSB Par 10 MSB Par 10 MSB Par 11 MSB Par 11 MSB Par 11 MSB Par 11 MSB	RATE DEPTH LEVEL	VO. CHR.	1 MS8 1 MS8 1 MS8 2 US8 3 US8 2 US8 3 US8 3 US8 4 US8 4 US8 4 US8 5 US8 5 US8 5 US8 5 US8 6 US8 6 US8 6 US8 7 US8 VS8	0 - 100 0 - 100 0 - 100 0 100 0 100 9 100	
0FH- 12H: 13H: 14H: 15H: 2EH: 2EH: 28H: 36H: 37H: 40H: 41H: 48H: 49H: 58H: 77H: 74H: 73H: 73H: 73H: 73H:	0000_000a8	Par 7 MSB Par 7 LSB Par 9 MSB Par 10 MSB Par 10 MSB Par 10 LSB Par 15 MSB Par 15 LSB Par 21 MSB Par 21 MSB Par 21 MSB Par 27 LSB Par 27 LSB Par 27 LSB Par 32 MSB Par 32 LSB Par 32 LSB Par 36 MSB Par 37 MSB Par 37 MSB Par 38 MSB Par	MASTER MIDI CAT MIDI CAT MIDI CAT	WOD. PHASE OX/OFF RATE RATE LEVEL LEVEL RECEIVE GOFF ASSIGN MIX	MSB 0 - 180 LSB 0 - 1 LSB (OFF. OX) MSB 0 - 100 LSB 0 - 100 LSB 0 - 66 LSB MSB 0 - 66 LSB F. AF. TOUCH, P 231. =64 - MSB 0 - 4 LSB MSB 0 - 4 LSB MSB NSB LSB	BEND. =95}	* Table 16 VOCODER Offset Address OH OTH OSH OSH OSH IZH ISH ISH ISH ISH ISH ISH ISH ISH ISH IS	Descrip 0000_0000B	0 - PHASER 1 : PRASER 2 : MASTER 2 : MSB Par 2 : MSB Par 3 : MSB Par 3 : MSB Par 4 : MSB Par 5 : MSB Par 6 : MSB Par 10 : MSB Par 11 : MSB Par 12 : MSB	RATE DEPTH LEVEL VOCDDER	VO. CHR. VO.	1 MS8 1 LS8 1 LS8 2 VS8 3 LS8 3 LS8 4 VS8 3 LS8 4 VS8 5 LS8 5 LS8 6 LS8 7 VS8	0 - 100 0 - 100 0 - 100 0 100 0 100 0 100 0 100	
0 PH - 12H: 13H: 14H: 15H: 15H: 15H: 28H: 28H: 36H: 37H: 40H: 48H: 49H: 58H: 73R: 74H: 74H: 74H: 74H: 74H: 74H: 74H: 74H	0000_000a8	Par 7 MSB Par 7 LSB Par 9 MSB Par 10 MSB Par 10 MSB Par 10 LSB Par 15 MSB Par 15 LSB Par 21 MSB Par 21 MSB Par 21 MSB Par 27 LSB Par 27 LSB Par 27 LSB Par 32 MSB Par 32 LSB Par 32 LSB Par 36 MSB Par 37 MSB Par 37 MSB Par 38 MSB Par	MASTER MIDI CAT MIDI CAT MIDI CAT	WOD. PHASE OX/OFF RATE RATE LEVEL LEVEL RECEIVE GOFF ASSIGN MIX	MSB 0 - 180 LSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB 0 - 100 LSB 0 - 100 LSB 0 - 66 LSB F, AF, TOUCH, P, =31, =54 - MSB 0 - 4 LSB WSB LSB	BEND. =95)	# Table 18 VOCODER Offset Address OH	Descrip Descrip ODO [1118 ODO ODDB ODD ODDB	0 - PHASER 1 : PRASER 2 : MASTER 2 : MASTER 2 : MASTER 2 : MASTER 1 : DUNN Par 2 : MS Par 2 : MS Par 3 : MS Par 3 : MS Par 4 : MS Par 4 : MS Par 5 : MS Par 5 : MS Par 10 : MS Par 10 : MS Par 10 : MS Par 10 : MS Par 11 : MS Par 12 : MS Par 12 : MS Par 12 : MS Par 13 : MS	RATE DEPTH LEVEL	VO. CHR. VO.	1 100 100 100 100 100 100 100 100 100 10	0 - 100 0 - 100 0 - 100 0 100 0 100 9 100	
0FH- 12H: 13H: 14H- 15H: 3EH 3FH 2AH 2BH. 36# 37# 40# 41# 48H 49H 58H : 73H 73H	0000_000a8	Par 7 MSB Par 7 LSB Par 9 LSB Par 10 MSB Par 10 LSB Par 15 LSB Par 15 LSB Par 21 LSB Par 22 LSB Par 32 LSB Par 35 LSB Par 36 MSB Par 36 LSB Par 37 LSB Par 37 LSB Par 37 LSB Par 27 LSB Par	MASTER MIDI CAT MIDI CAT MIDI CAT MIDI CAT MIDI CAT	WOD. PHASE OX/OFF RATE RATE LEVEL LEVEL RECEIVE GOFF ASSIGN MIX	MSB 0 - 180 LSB 0 - 1 LSB (OFF. OX) MSB 0 - 100 LSB 0 - 100 LSB 0 - 66 LSB MSB 0 - 66 LSB MSB 0 - 66 LSB MSB 0 - 64 LSB MSB 0 - 4 LSB MSB 0 - 4 LSB MSB 0 - 4 LSB	BEND. =95)	* Table 16 VOCODER Offset Address OOH- OTH- OSH- OSH- OSH- OSH- OSH- OSH- OSH- OS	Descrip 00000 [1:119 00000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008	0 - PHASER 1 : PRASER 2 : MASTER 2 : MSB Par 2 : MSB Par 3 : MSB Par 3 : MSB Par 4 : MSB Par 5 : MSB Par 6 : MSB Par 10 : MSB Par 11 : MSB Par 12 : MSB	RATE DEPTH LEVEL VOCDDER	VO. CHR. VO.	1 100 100 100 100 100 100 100 100 100 10	0 - 1000 0 - 1000 0 - 1000 0 - 1000 0 - 1000 0 - 1000 0 - 1000	
0FH- 12H: 13H: 14H: 15H: 2EH: 2EH: 28H: 36H: 37H: 40H: 41H: 48H: 49H: 58H: 77H: 74H: 73H: 73H: 73H: 73H:	0000_000a8	Par 7 MSB Par 7 LSB Par 9 LSB Par 9 LSB Par 10 MSB Par 10 LSB Par 15 LSB Par 15 LSB Par 21 LSB Par 21 LSB Par 27 LSB Par 27 LSB Par 27 LSB Par 27 LSB Par 32 LSB Par 27 LSB Par 27 LSB Par 27 LSB Par 15 LSB Par 15 LSB Par 15 LSB Par 27 LSB Par 15 LSB Par 27 LSB Par 15 LSB Par 27 LSB Par 32 LSB	MASTER MIDI CXT MIDI CXT MIDI CXT MIDI CXT MIDI CXT MIDI CXT	WOD. PHASE ON/OFF ON/OFF RATE ON/OFF RATE ON/OFF RATE ON/OFF ON/	MSB 0 - 180 LSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB 0 - 100 LSB 0 - 66 LSB MSB 0 - 66 LSB MSB 0 - 64 LSB MSB 0 - 4 LSB MSB MSB MSB MSB MSB MSB MSB MSB MSB M	BEND. =95)	* Table 16 VOCODER Offset Address OH OTH OSH OSH OSH OSH OSH OSH OSH OSH OSH O	Descrip Descrip ODO [111] ODO 0000B ODO 0008	0 - PHASER 1 : PRASER 2 : MASTER 2 : MASTER 2 : MASTER 2 : MASTER 4 : MSB Par 2 : LSB Par 3 : LSB Par 3 : LSB Par 4 : LSB Par 4 : LSB Par 5 : LSB Par 9 : LSB Par 9 : LSB Par 10 : LSB Par 11 : LSB Par 12 : LSB Par 13 : LSB Par 13 : LSB Par 14 : LSB Par 15 : LSB	RATE DEPTH LEVEL VOCDDER	VO. CHR. RO.	1 958 1 958 1 100 100 100 100 100 100 100 100 100 1	0 - 1000 0 - 1000 0 - 1000 0 - 1000 0 - 1000 0 - 1000 0 - 1000	
0FH- 12H1 13H1 14H- 15H1 3EH 3FH 2AH 2BH. 36H 37H 40H 41H 48H 49H 58H 1: 73H 73H 73H	0000_000a8	Par 7 MSB Par 7 LSB Par 9 MSB Par 10 MSB Par 10 MSB Par 10 LSB Par 15 MSB Par 15 LSB Par 21 MSB Par 21 LSB Par 27 MSB Par 27 LSB Par 27 LSB Par 32 MSB Par 32 LSB Par 32 MSB Par 32 LSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 37 LSB Par 38 MSB Par 38 MSB Par 38 MSB Par 36 MSB Par 37 LSB Par 38 MSB Par 38 MSB Par 37 LSB Par 38 MSB Par 38 MSB Par 38 MSB Par 37 LSB Par 27 MSB Par 10 MSB Par 21 MSB Par 21 MSB Par 21 MSB Par 22 MSB	MASTER MIDI CAT	WOD. PHASE ON/OFF	MSB 0 - 180 LSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB 0	BEND. =95)	* Table 16 VOCODER Offset Address OH- OHS	Descrip 00000 11119 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008	0 - PHASER 1 : PRASER 2 : MASTER	RATE DEPTH LEVEL VOCDDER	VO. CHR. RO.	1 100 100 100 100 100 100 100 100 100 10	0 - 1000 0 - 1000 0 - 1000 0 - 1000 0 - 1000 0 - 1000 0 - 1000	
0FH- 12H: 13H: 14H- 15H: 3EH 3FH 2AH 2BH. 36# 37# 40# 41# 48H 49H 58H : 73H 73H	0000_000a8	Par 7 MSB Par 7 LSB Par 9 LSB Par 9 LSB Par 10 MSB Par 10 LSB Par 15 LSB Par 15 LSB Par 21 LSB Par 21 LSB Par 27 LSB Par 27 LSB Par 27 LSB Par 27 LSB Par 32 LSB Par 27 LSB Par 27 LSB Par 27 LSB Par 15 LSB Par 15 LSB Par 15 LSB Par 27 LSB Par 15 LSB Par 27 LSB Par 15 LSB Par 27 LSB Par 32 LSB	MASTER MIDI CAT	WOD. PHASE ON/OFF ON/OFF RATE ON/OFF RATE ON/OFF RATE ON/OFF ON/	MSB 0 - 180 LSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB 0	BEND. =95)	* Table 16 VOCODER Offset Address OH- OHS	Descrip Descrip ODO [111] ODO 0000B ODO 0008	0 - PHASER 1 : PRASER 2 : MASTER 2 : MSB Par 2 : LSB Par 3 : LSB Par 3 : LSB Par 3 : LSB Par 4 : LSB Par 5 : LSB Par 6 : LSB Par 10 : LSB	RATE DEPTH LEVEL VOCDDER	VO. CHR. RI F. WIA PRE DELA' RATE RATE	1 MSB 1 LSB 1 LSB 1 LSB 2 USB 3 USB 3 USB 3 USB 3 USB 3 USB 3 USB 4 USB 5 USB 5 USB 6 USB 7 USB 6 USB 7 USB 6 USB 7 USB 8 USB	0 - 100 0 - 100 0 - 100 0 100 0 100 0 100 0 100	
0FH- 12H1 13H1 14H- 15H1 3EH 3FH 2AH 2BH. 36H 37H 40H 41H 48H 49H 58H 1: 73H 73H 73H	0000_000a8	Par 7 MSB Par 7 LSB Par 9 MSB Par 10 MSB Par 10 MSB Par 10 LSB Par 15 MSB Par 15 LSB Par 21 MSB Par 21 LSB Par 27 MSB Par 27 LSB Par 27 LSB Par 32 MSB Par 32 LSB Par 32 MSB Par 32 LSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 37 LSB Par 38 MSB Par 38 MSB Par 38 MSB Par 36 MSB Par 37 LSB Par 38 MSB Par 38 MSB Par 37 LSB Par 38 MSB Par 38 MSB Par 38 MSB Par 37 LSB Par 27 MSB Par 10 MSB Par 21 MSB Par 21 MSB Par 21 MSB Par 22 MSB	MASTER MIDI CAT	WOD. PHASE ON/OFF	MSB 0 - 180 LSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB 0	BEND. =95)	* Table 16 VOCODER Offset Address OOH OTS: G49 G5H OFH OFH OFH OFH OFH OFH OFH OFH OFH OF	Descrip 0000 [1119 0000 0000B	0 - PHASER 1 : PRASER 2 : MASTER 3 : MSB Par 2 : MSB Par 3 : MSB Par 3 : MSB Par 3 : MSB Par 4 : MSB Par 5 : MSB Par 10 : MSB Par 10 : MSB Par 10 : MSB Par 11 : MSB Par 12 : MSB Par 13 : MSB Par 14 : MSB Par 15 : MSB Par 15 : MSB Par 15 : MSB Par 15 : MSB Par 16 : MSB Par 17 : MSB Par 18 : MSB Par 18 : MSB Par 18 : MSB Par 18 : MSB Par 19	RATE DEPTH LEVEL S VOCODER	VO. CHR. VO.	1 MIX. 100 100 100 100 100 100 100 100 100 10	0 - 100 0 - 100	
0 PH - 12 PH - 13 PH - 14 PH - 15 PH - 2 PH	0000_000a8	Par 7 MSB Par 7 LSB Par 9 MSB Par 10 MSB Par 10 MSB Par 10 LSB Par 15 MSB Par 15 LSB Par 21 MSB Par 21 LSB Par 27 MSB Par 27 LSB Par 27 LSB Par 32 MSB Par 32 LSB Par 32 MSB Par 32 LSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 36 MSB Par 37 LSB Par 38 MSB Par 38 MSB Par 38 MSB Par 36 MSB Par 37 LSB Par 38 MSB Par 38 MSB Par 37 LSB Par 38 MSB Par 38 MSB Par 38 MSB Par 37 LSB Par 27 MSB Par 10 MSB Par 21 MSB Par 21 MSB Par 21 MSB Par 22 MSB	MASTER MIDI CAT	WOD. PHASE ON/OFF	MSB 0 - 180 LSB 0 - 1 LSB (OFF, OX) MSB 0 - 100 LSB 0	BEND. =95)	* Table 16 VOCODER Offset Address OOH OTS: G49 G5H OFH OFH OFH OFH OFH OFH OFH OFH OFH OF	Descrip 00000 11119 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008 0000 00008	0 - PHASER 1 : PRASER 2 : MASTER	RATE DEPTH LEVEL S VOCODER	VO. CHR. RO.	1 MIX. 100 100 100 100 100 100 100 100 100 10	0 - 100 0 - 100	

```
KEYBOARD MULTI I
                                                   WSB 0 - 100
      36H1 0000_000aB | Par 27 MSB MASTER LEVEL
      37H! 0aas_aasaB ! Par 27 LSB
                                          LEVEL
                                                   LSB
                                                                                  ! Address !
                                                                                                  Description
      68H: Caaa_aasa8 : Xame 1
                                                                                         00H: 0001_000t8 | algorithm t7
                                                                                         01H1 00D0_0000B | DUNKY
       73#1 0aaa_aaaa8 : Mame 12
                                                                                         OZHI DOGO_GOGAB ! Par 1 MSB EFFECT OK/OFF MSB
      74HI 0000 0000B | End Of Name
                                                                                                                              ON/OFF LSB
                                                                                          03H| 0bcd_00008 | Par 1 LSB
      75H: 0000 0000R | END Of Data
                                                                                                                            a : EQUALIZER OFF/ON 0 / 1
                                                                                                                            b : DELAY
                                                                                                                                           OFF/0% 0 / 1
                                                                                                                            c : CHORUS
                                                                                                                                           OFF/OX 0 / 1
* Table 17
                                                                                                                                           OFF/0% 0 / i
                                                                                                                            d : REVERB
ROTARY
                                                                                                                              LOW EQ MSB 0 - 24
LOW EQ LSB (-12-+12dB)
                                                                                          04H1 0000_000aB ! Par 2 MSB EQ
                                                                                          OSHI Daza assaB 1 Par 2 LSB
 Offset !
                                                                                          06RI 0000 000aB 1 Par 3 MSB
                                                                                                                              MID FREQ MSB 0 - 12
 iddress '
              Description
                                                                                                                              MID FREQ LSB (250Hz-4kHz)
                                                                                          82.1 C raf | Bassa asso | HTO
--------
                                                                                          08HI 0000_000aB | Par 4 MSB -
                                                                                                                              MID EQ
                                                                                                                                       NSB 0 - 24
      00H; 0001 0000B; algorithm 16
                                                                                                                                       LSB (-12--12dB)
                                                                                          Oghi Casa_aasaB i Par 4 LSB
                                                                                                                              MID EQ
      01H; 000G 0000B ! DUNGLY
                                                                                          0AH: 0000_000aB | Par 5 MSB
                                                                                                                              RIGH EQ MSB 0 - 24
                                                                                          OBH: Gaaa_aaaaB ! Par 5 LSB
                                                                                                                              HIGH EQ LSB (-12-+12d8)
       04H: 0000 000a8 : Par Z MSB ROTARY DRIVE MSB 8 - 100
                                                                                          OCH: 0000_000aB ! Par 6 MSB
                                                                                                                              LPF
                                                                                                                                       11 - D 82K
       OSH! Gaaa aaaaB ! Par 2 LSB
                                          DRIVE LSB
                                                                                          ODHi Gaamaaaaa i Par 6 LSB
                                                                                                                              LPF
                                                                                                                                       LS8 (500AZ-THRU)
      06H: 0000 000aB : Par 3 MSB
                                           SPEED
                                                 MSB 0 - 100
                                                                                          0EH1 0000_000a8 1 Par 7 MS8
                                                                                                                              LEVEL
                                                                                                                                       MSR 0 - 24
       07H; Oman mana# | Par 3 LSB
                                           SPEED
                                                   LSB
                                           LO RATE S MSB 0 - 100
                                                                                          OFH: Osas_sasaB : Par 7 LSB
                                                                                                                              LEVEL
                                                                                                                                       LSB (-12-+12dB)
       08H! 0000_000aB i Par 4 MSB
       09HI Daam aaaaB I Par 4 LSB
                                           LO RATE S LSB
                                           LO RATE F MSB 0 - 100
                                                                                          12H; 0000 000aB ( Par 9 MSB DELAY
                                                                                                                              D. TIME H MSB 0 - 800
       DAH: 0000_000aB | Par 5 MSB
       OBHI Gama_aaaa8 ' Par 5 LSB
                                           LO RATE F LSB
                                                                                          13H: 0asa_sasaB i Par 9 LSB
                                                                                                                              D. TIME H LSB
       OCH! 0000_000a8 ! Par 6 MSB
                                           HI RATE S MSB 0 - 100
                                                                                          14H! 0000 000aR | Par 10 MSR
                                                                                                                              D. TIME L. WSB
                                                                                          15H! Oaaa_amam8 | Par 10 LSB
                                                                                                                              D. TIME L LSB
       ODH: Gaaa_saa8 | Par 6 LSB
                                           HI RATE S LSB
                                           HI RATE F MSB 0 - 100
                                                                                          16H: 0000 000aB : Par 11 MSB
                                                                                                                              FEEDBACK MSB 0 - 100
       OEH: 0000_000aB ! Par 7 MSB
                                           HI RATE F LSB
                                                                                          17H! Casa sasaB ! Par 11 LSB
                                                                                                                              FFFDRACK 1SR
       OFH! Gaaa_aaaa8 | Par 7 LSB
                                                                                                                              LEVEL MSB 0 - 100
LEVEL LSB
                                                                                          18H1 5000 000aB : Par 12 MSB
                                           LO RISE T MSB 0 - 100
                                                                                          1981 0aaa_aaaaB | Par 12 LSB
       12H: 0000_000aB : Par 9 MSB
       138 Osaa aasaB ! Par 9 LS8
                                           LO RESE T LSB
                                                                                          1EHI 0000_000a8 | Par 15 MSB CHORUS PRE DELAY MSB 0 - 60
       14H: 0000 000aB : Par 10 MSB
                                           HI RISE T MSB 0 - 100
       15#; Oaaa aaaaH ! Par 10 LSB
                                           HI RISE T LSA
                                                                                          IFEL Gasa_sasaB i Par 15 LSB
                                                                                                                               PRE BELAY USB
       16#+ 0000_000aB + Par 11 MSB
                                           LO LEVEL MSB 0 - 100
                                                                                          20H: 0005_000aB | Par 15 MSB
                                                                                                                              RATE
                                                                                                                                      MSB 0 - 100
       17H: 0aaa_aaaaB : Par 11 LSB
                                           LO LEVEL LSB
                                                                                          21H! Oaaa_aaaaB ! Par 16 LSB
                                                                                                                              RATE
                                                                                                                                       LSB
       18R: 0000_000aB . Par 12 MSB
                                           H1 LEVEL MS8 0 - 100
                                                                                          22H: 0000 000aR | Par 17 MSR
                                                                                                                              DEPTH
                                                                                                                                       MSR 0 - 100
                                           HI LEVEL LSB
                                                                                          23H! Gasa_seaaB : Par 17 LSB
                                                                                                                              DEPTH
                                                                                                                                       LSB
       198: 0aaa_aasa8 : Par 12 LSB
       IAH: 0000_000aB : Par 13 MSB
                                           SEPARAT. MSB 0 - 100
                                           SEPARAT. LSB
                                                                                          ZAH: 0000_00088 | Par 21 MSB | REVERB | REV TIME | MS8 | 0 - 199
       IBH. Caaa_aaaaB : Par 13 LSB
                                                                                          2BH) Gasa asaaB ! Par Zi LSB
                                                                                                                               REV TIME LSB (0, 1-20, 0s)
       IEH: 0000_000aB ) Par 15 MSB N.S.
                                           THRESHOLD MSB 0 - 100
                                                                                          2CHi 0000 000a8 | Par 27 MS8
                                                                                                                               PRE DELAY MSR 0 - 100
                                           THRESHOLD LSB
                                                                                          2DK: Oaaa_aaaaB | Par 22 LSB
                                                                                                                               PRE DELAY LSB
       IFH: Casa_aaaaB : Far 15 LSB
                                                                                                                                       WSB 8 - 11
                                                                                          7EH1 0000 000aH | Par 23 MSH
                                                                                                                               LPF
       2AH 0000 000aB : Par 21 MSB MASTER LEVEL
                                                   MSB 0 - 100
                                                                                          ZFR! Qaaa gaaaB ! Par 23 LSB
                                                                                                                              LPF
                                                                                                                                        ISB (500Hz-THR!)
                                                                                          30H! 0000 000aB ! Par 24 MSB
                                                                                                                              LEVEL 45B
                                                                                                                                       MSR 0 - 100
       2881' Qasa asasB ! Par 21 158
                                           LEYEL
                                                   1.58
                                                                                          31H: Oaza_azaa8 : Par 24 LSB
       36H. 0000_0008 : Par 27 MSH MIDT CNT RECEIVE MSB 0 - 66
                                                                                          358; 0000_000aB ! Par 27 M58 WASTER LEVEL
       37K: 0aas_ssasS : Par 27 LSS
                                           RECEIVE LSB
                                                                                                                                       MSH 0 - 100
                                                  (OFF, AF, TOUCH, P. BEND,
                                                                                          37H: Qasa_sasa8 : Par 27 LSB
                                                                                                                               LEVEL
                                                                                                                                       1.58
                                                  20 - 231, 264 - 293)
                                                                                          40H: 0000_000aB | Par 32 MSB | MIDI CNT RECEIVE | MSB 0 - 56
       40H: 0000_000aB Par 32 MSB MIDL CXT ASSIGN MSB 0 - 3
                                                                                          41H Oaaa aaaaB : Par 32 LSB
                                                                                                                               RECEIVE LSB
                                                                                                                                      (OFF, AF, TOUCH, P. BEND.
       41H Daga aggaß Par 32 LSB
                                         ASSIGN LSB
                                                                                                                                      20 - 231, 264 - 295)
       48N: 0000_000a8 Par 36 MSB MID! CNT MIN
                                                    MSB
                                                                Table34:
                                                                                          48H) 0000_000aB : Par 35 MSB - MIDI CAT ASSIGN
                                                                                                                                       ¥SB 0 · 3
       49K Gaaa_aaaaB · Par 36 LSB
                                                    LSB
                                                                                          19H Oada HadaB Par 35 LSB
                                                                                                                              ASSIGN
       MSB.
                                                                                          50H 0000,000a8 Par 40 WS8 WIDE CAT WILL
       51H Osaa aasaB Par 40 LSB
                                          MAX
                                                    LS8
                                                                                          51H Omam aama8 Par 40 LSB
                                                                                                                                        LSB
       68H Oasa aaaaB . Name I
                                                                                          34H: 0000_000a8 : Par 42 NSB - NIDI CNT NAN
                                                                                                                                        WSB 0 - 100
                                                                                          55H Daga aagab Par 42 LSB
       738 Qaaa aaaa8 Name 12
       74H 0000 00008 End of Name
       75H 0000 0000B END OF Date
                                                                                          68H Oada aaaaB Name i
                                                                                          73H Qaaa aaaa8 Name 13
Table 34
                                                                                          74H 0000 0000B End Of Name
                                           NIDE CAT MINAMAX
                                                                                          15H: 0000 0000B END 0! Data
                                                    .. ....
                  Table 35
         WIDE CAT ASSIGN O ROTARY DRIVE
                                                   100
                     1 ROTARY SPEED 0 I
2 ROTARY SPEED(TREG) 0 I
                    I ROTARY SPEED
                                                                                                                                 MESS CAT MINAMAN
                     3 MASTER LEVEL
                                               0 - 100
                                                                                            WIDT CAT ASSIGN 0 DELAY LEVEL
                                                                                                                                     100
                                                                                                    1 CHORLS RATE
                                                                                                                                   0 100
                                                                                                           2 REVERB LEVEL
                                                                                                                                  3 160
                                                                                                           3 WASTER LEVEL
```

* Table 18

THRESHOLD LSB

2BH: Cama_sama8 (Par Z1 LSB

idress (Descri	ption				-		i Offset i Address	Des	cription					
		algorithm [: 008							
	0000 gccoB		•						1 0001_001 1 0000_000			}			
		Par 1 MSB	EFFECT	OX/OFF	MSB							E C C C	T ON/OFF	uca	
03Ht	0bcd_0000B	Par I LSB		OX/OFF	LSB			-="	Obcd_e00	90 : 74: NA : Par	1 150	Z.F.E.L		958	
;				E : PHASER		OFF/OX	0/1		;	VB . FAI	1 125		OK/OFF	ES3	
				b : EQUALIZ	ER		0 / 1	;		i			a : EQUAL b : PHASE		OFF/OX 0 /
;		1	1	c : CHORUS			0 / 1	ì		ì			c : CHORU		OFF/OX 0 /
1		ı		d : REVERB		OFF/OX	0/1	!	:				d : PAKNI		OFF/OX 0 /
048:	0000_000a8	Par 2 MSB	PHASER	MODE	MSB	0 - 3			ı	i			e : REVER		OFF/OX 0 /
OžH;	Casa_sszs6	Par 2 LSB		MODE	LSB	(1 - 4)		: 04H	0000_000		Z WSB	£Ο	LOW EQ		0 - 24
0641	0000_000aB	Par 3 MSB		RATE	MSB	0 - 100)	i 05H	(Casa_aas	a0 i Par	2 LSB		LOW EG		(-1212:18)
07H?	Casa_sssB	Par 3 LSB		RATE	L58			: C6H	0000_0000	36 ! Par	3 NSB				0 - 12
USH:	0000_000aB	Par 4 MSB		DEPTH		0 - 100	}	· 078	Cama_aaa;	aB i Par	3 LSB				(250Hz-4kHz)
0311	Bass_sas0 Bs000_0000	rar 4 LSB		DEPTH	LSB			' 08E	1 0006_000;	a8 : Par	4 X2B		MID EQ		0 - 24
	0888_8888			LAURAN		0 - 100	ı	HEO '	Qaaa_aaa	18 ∣ Par	4 LSB		MID EQ	LSB	(-12-+12dB)
	0000_00048			MANUAL	LSB			HAO	0000_000;	a9 Par	5 ¥\$8		KICK EQ	HSB	0 - 24
ODH	Casa_sssaB	. Dae 2 120		RESONANCE		0 - 100	'	HEO :	Oaza_aza	aB : Par	5 L58		HIGH EQ	LSB	(-1212dB)
DEH	0000_0008	Par 7 USB		RESONANCE STEP		0 - 100		: OCH	0000_0008	≇B ≀ Par	5 MSB		LPF		0 - 10
OFH	Dasa_ssssD	Par 7 ISB	•	STEP	LSB	u - 100	l	: ODH • OF#	Cass_sss	38 Par	6 LSB		LPF		(SDOHZ-THRU)
				3163	طرت			, uen	0000_0002	B I Par	1 #2B		LEVEL		0 - 24
1281	0000 000aB	Par 9 MSB	EQ	LOW EQ	uca	0 - 24		t ura	Qaaa_aaa	ıs Par	7 F2B		LEVEL	LSB	(-1212dB)
	Qaaa_aaaa8			LOW EQ		(-1212	AR1								
[48]	EE000_000aB	Par 10 MSB		MID FREQ			,	14n	0000_000a 0aaa_aaaa			MASE			0 - 100
(5H)	Gass_assa0	Par 10 LSB		MID FREQ			kHz)		Vaaa_aaaa 0000_000a		82J P		RATE	1.58	
16H±	4000_000aB .	Par 11 MS8		MID EG		0 - 24		, 14s	0000_0008	u rar	10 USB		DEPTE		0 - 100
17H:	Gass_asss0 .	Par II LSB		MID EQ		(-1212	d8)	: ian : isu:	0000,0006	ia i gat ia i gat	11 Aca 14 F9P		DEPTH	LSB	A 144
18#;	. Sacco_0000a8	Par 12 XISB		HIGH EQ		0 - 24		1011	0000,0000	ω Γ4.Γ ιΑ ; 9>+	17 150		MANUAL		0 - 100
19#	Casa_aaaa8 -	Par 12 LSB		HIGH EQ		(-12-+12	dB)	: 186	0000_0008	il : Par	17 150		MAKUAL	LSB.	0 - 100
IAH:	0000_000aB	Par 13 458		LEVEL		0 - 24		1911	Gara assa	B Par	17 150				0 - 100
TBH:	Gessa_sassa :	Par 13 LSB		LEVEL		(-1212	dB)						RESONANC		
								1831	0000_000a	8 Par	15 MSB	N. S.	THRESHOL	กษรณ	8 - 100
		Par 15 NSB	CHORUS	PRE DELAY	MSB	0 - 60			Qaaa_aaaa		IS LSB		THRESHOL		4 100
	Gass_sss0			PRE DELAY	LSB				0000_000a						0 - 100
20H:	0000_000a8	Par te MSB		RATE	MSB	0 . 100			0aaa_aaaa				RELEASE	LSB	
718	Gess ses	Par 16 LSB		RATE	LSB			22H i	0000_000a	B Par	17 MSB		LEVEL		O - 100
22H1	0000_000aB .	Par 17 MSB		DEPTH		0 - 100		2381	Qaaa_aaaa	8 Par	17 LSB		LEVEL	LSB	
23H.	Asss_sss0	far 17 LSB		DEPTH	TZB										
918.	0000 000	D	000	B. Bart		_		2AH	0000_000a	8 гРаг	21 VSB	CHORU	FRE DELA	1, 1128	0 - 50
288) 200	0000_000a8 0aaa_aaaa0		REVERB	REV TIME				2B#1	Oasa_saas	8 Par	21 LSB		PRE DELA		
		Par 21 LSB		REV TIME				2CH I	0000_000a	8 Par	ZZ WSB		RATE		0 - 100
	0000_000a8 0aaa_aaaa8	Par 22 USB		PRE DELAY		0 · 200			Оаяв_зава		ZZ LSB		RATE	LSB	
	0000_000aB	Par 22 LSB Par 23 MSB		PRE DELAY				ZEH!	0000_000a	8 Par	23 MSB		DEPTH	MSB	0 - 100
	Cana_aaaaB			LPF LPF		0 - 10 (500Hz-TI	1001	ZFH	Oaaa_aaua	8 Par	23 LSB		DEPTH	LSB	
HOC	0000_080aB	Par 24 WSB				0 - 100	nac,	500	****						
31H;	Oaas_aasaB	Par 24 LSR			LSB	u - 107		3611	0000_000a	B Pari	Z1 428	PAKN 1	G RATE		0 - 100
		11 11 100		44164	LJD			3891	0222 2222	B Par	27 LSB		RATE	LSB	_
36K	0000_000aB .	Par 27 WSB	WASTER	LEVEL	usa	0 - 100			0000_000a 0aaa_aaaa				DEPTH		0 - 100
378;	Caaa_aaaaB .	Par 27 LSB			LSB				0000 0008		28 LSB		DEPTH	LSB	_
								3RH:	Gaaa aaaa	о газ О бас	20 1 CD		MOD. WAVE		
10#	0000_000a8	Par 32 MSH	MIDI CXT	RECEIVE	MSB	0 56			2000,0000	u 741.	11 (30		MOD. WAVE	128	(TRI, SQR)
41H.	Gasa_asse0	Par 32 LSB		RECEIVE				10H	5000,0000	A Par	12 USB	REVERS	PEL TIME	VECO	0 100
				(OF	F. AF.	TOUCH, P.	BEND.		Oaaa aaaa			1113111			
				=0	- #3	1.=64 -	=95)		0000,000a		32 USB				(0.1-20.0s)
									Одда зада		33 LSA		PRE DELA PRE DELA		A - 100
	0000_000aU	Par 36 MSH	Albt CZ1	ASSIGN	¥28	0 š			0000 000a		34 USB		LPF		0 !0
49H (Онаа вавав	Par 35 LSB		ASSIGN	LSB				Омаа амыа		34 LSB		LPF		(500Hz-THRL)
									0000 000a		35 458		LEVEL		8 - 100
	Ba000,000aB		MIDI CXT			0 - 100	Table36	47H	Озаа зива	B Pari	35 LSB		LEVEL	LSB	- 100
ilH (Эанн ₋ наалБ	Par 40 LSB		WIN	ESB			4811	0000 000a	в Раг	36 45B	WASTER	LEVEL		ā 100
	1448 BC- "								Олан драв		36 1.58		LEVEL	LSB	144
	0000 000aB		MIDE CAL			9 100				•					
ap#] (Оааа, аааав	Par 42 LSB		VAS	LSB				0000_000a1		HZIF OL	WIDI E	NT RECEIVE	VS8	0 66
gap ·	Jane "							318	Оама нава		IC LSB		RECEIVE	r2R	
	Busse, east	\ame t													. TOUCH, P. BENI
; 710# /	Nava ******	; }#### 12													31, =54 - =95)
	Bass, sast	Name 12													
		End Of Name							0000 000at		EZW SI	MIDI C	ST ASSIGN	4SB	Q 7
	3000 0000R							Rči	Одан аалыі	Par a	E21 C		ASSIGN	1.3B	
36								_							
u.u									0000 0006			MIDE C	NT MIN	45B	0 (69 Tab)
								390	Опра вичей	C Pari	i4 LSB		WIX	LSB	
				AID: (71	10.7	MAX									
11170	LOVE SCENE	, n parecon-	re		-				0600 600at		16 N2B	MIDI C	NT HAR	458	C (Ou
14:11	CAT ASSIGN			0 10				590	Usaa aadai	Fer a	IK LSB		WAX	Sh	
		 PHASER DE PHASER ST 		9 (5											
								548	Р аан задас	\asme					
				0 (0						122,000	1				
		2 CHORUS RA	ſĔ	0 10	â			1			:				
			re Vei		ê 9			: 13H	9808 Jacat 3006 Joosi	Name	1				

Table 37								Daan_aasaB						iooHz-Ti	HRU) i
*		<u>-</u>		i MIDI CAT WINA	MAX			0000_000aB 0888_8888B				_	458 8 SB	- 100	1
				***************************************				1 8s000_0000			LIKE DR.		458 0		ŧ
K	IDI CNT ASSIGN			0 - 100		: I \$11	H 1	l Bassa_essO	Par 40	, f2B		MODE 1	LSB (I	2)	1
		1 PHASER D		(0 - 100 (0 - 100		541		0000_000a8 i	Par 42	NSB	MASTER	LEVEL 1	458 (- 100	1
		3 ! CHORUS R		0 - 100		i i 551		Bassa_ass0	Par 4	L58		LEVEL !	L58		!
		4 PANKING	RATE	1 0 - 100		; l	;	1 1 Ba000_000aB	Da = 1	1 1100	MIDI CXT	DECEIVE 1	uea r	0 - 66	}
		5 L PASSING		1 0 - 100		•		Cana_aasaB i					LSB \	, 50	;
:		6 i REVERB L 7 i Master i		} 6 - 100			1	1					F, AF.	TOUCH, P	. BEXD, i
						•	1	!				= 0	- =3	1.=64 -	≖95) .
* Table 2: GUITAR M	AULTI					! 5D	HI	1 1 EsD00_0000 1 Essa_sesD 1	Par 4		NIDI CXT		MSB (0 - 5	
Offset								0000_000aB i		8 MSB	MIDI CKT	MIR	HZB I	0 - 100	Table38:
Address	! Descri	ption					HI i	0aaa_aaaaB		a LSB		MIN	LSB		i i
	11 0001_01008					: 1 64		: 1 @acco_cccc		O MSB	MIDI CKT	HAX	HSB	0 - 100	i
	80000_0000		•			; i 65		Casa_sassB		O LSB		MAI	LSB		ı
	Ba000_0000 18		EFFECT				: :	l Qasa_asaB i		1					:
031	ii Obcd_efg0B	Par I LSB	а	: COMPRESSOR	OFF/ON 0 / 1		: ;			:					i
				: OD/DS	OFF/ON 0 / 1			Qaaa_aaaa8 t							:
				: EQUALIZER	OFF/ON 0 / 1			0000_0000B !							:
	1			: DELAY : CHORUS	OFF/ON 0 / 1							····			
			_	: REVERB	OFF/ON 0 / 1	Table 38									
			_	: LINE DRIVER		:			*****			: MIDI CXI			
	H: 0000_000aB		COMP.	SUSTAIN MSB SUSTAIN LSB	0 - 100	:									
	H: 0aaa_aaaaB H: 0000_000aB				9 - 100		Mil	DI CKT ASSIGN	(0	D/DS 0	RIVE	1 0 - 10	10		i
	H: Oaaa_aaaaB			ATTACK LSB							EVEL	0 - 10			-
	H1 0000_000aB				0 - 100					ELAY L BORUS B		. 0 - 10			
09	H: Caaa_aasaB			LEVEL LSB		•				EVERB L		0 - 10			
12	H: 0000_000aB		00/05	MODE MSB	0 - 3	;				laster L		0 - 10	1 G		
13	HI Qaas_aaaa8	? Par 9 LSB		MODE LSB	(OD TURBO OFF-			* * * * * * * * * * * * * * * * * * *						, ,	
				2010C H65	DS TURBO ON	} : ≭ Table :	22								
	H: 0000_000aB H: 0ama_amaB			DRIVE MSB DRIVE LSB	0 - 100	VOCAL 3		LTI							
	N: 0000_000aB				0 - 100	********		*****							
	H: Oaaa_zzaaB			LEVEL LSB		Offset									
	U. 0688 *** *	Dec 15 145	re.	LOW EQ XISB	Q - 24	Address		Descri							
	H: 0000_000a8 H: 0aaa_aaaxB	Par 15 MSB Par 15 LSB	EQ		(-12-+12d8)		OHL	0001_0101B	aigo	rithm ?	ı				
	H. 0000 000FB				0 - 12			0000_0000B							
	Н: Озаа_азлав				(250Hz-4KHZ)			0000_000a8 0bcd_e0008			EFFECT	0%/0FF 0%/0FF	KZB KZB		
	H- 0000_000a8				0 - 24 (-12-+12d8)			•		1 646		: LINITER		OFF/OX	0/1
	H! Gaaa_aaa8 H: 6000_000a8	Par 18 458			0 - 24	i	i		1		t	: ENHANCE	R		0/1
	К: Оаза_азааВ				(-12-+12dB)							: DELLY			0/1
26	8a000_0000 H	Par 19 458			0 - 24				•		-	: CHORUS			V 9 / 1 V 0 / 1
27	'H. Сава_ааза8	. Par 19 LSB		LEVEL LSB	(-1212dB)	. а	MI	0000_000aB	Par	7 USB	LINETER		WSB		
7 4	As000_000aA	Par 21 VSH	v. 5.	THRESHOLD MSB	0 - 100			Озаа зазав			51/4114	THRESHOLD			
	an oooo_oooan BH Oaaa_aaa8		.1- 44	THRESHOLD LSB	, ,,,,			8s000_000aB				RATIO	SSW	0 3	
	H 0000_000a8				0 - 100			Oaaa_aaaaB				RATIO		(2:1-20	
21)H Caaa aasaB			RELEASE LSB				0000_000aB		4 VSB		RELEASE		0 10	34
	Ba0D0_000aB				0 - 100			0aaa_aaaaB 0000_000a8		2 A2B 1 F2B		RELEASE Level	LSB USB	9 16	05
21	Seess ees H	Par 23 8.58		LEVEL LSB				Daaa aaaaB		5 LSB		LEVEL	LSB		
36	5H 0000_000aB	Par 27 WSB	DELAY	D. TIME H MSB	0 - 1200										
	714. Озаа завав	Par 27 LSU		D. TIME H LSB				9e000 000aB			ENHANCE			0 - 10	DG
	SH 0000_000a8			D. TIME L MSB				Casa_asaaB : 0000_000aB		9 LSB		EON WIX	LSB USB	j 11	00
	Esses, esső He Hacco coco . Ka			D. TIME L LSE FEEDBACK MSE				0aaa aaaaB		10 LSB		FOX. ALX	F28		
	ни Озав вазав			FEEDBACK LSE		1	168	0000_000a8		II WSB		HIGH MIX		ម !	úti
	CH 0000_000aH	Par 30 WSH	ı		G 100	!	171	. 0aaa_aaaa8	Par	11 128		HIGH MIX	LSB		
3	рн Озаа_аава8	Par 30 4.58	I	LEVEI. LSE	1	1	lEn	8a000 8000	g _a ,	82¥ &1	V. S.	THRESHOLI	azir o	0 :	00
	OH 0000_000at	Far 32 WSA	CHORLS	NGDE VISI	1 0 2			Seser_ese0		15 LSB		THRESHOL		- '	-
	on oooo,oocar IK Oaan,aaaaf				(MONO-STEREOZ)		20H	_		16 USB		RELEASE	usa	ů (150
	20 0000,000af				3 0 100	;	218	Озаа аааав	Par	16 L58		RELEASE	£S#		
4	3H Gaar aasat	l dar 33 i.Sh	1	RATE LSI			.	BOCO				15 *13 D	1957-		1250
	1# 0000 000at			DEPTK VISI			ZAH 2DR			21 NSB	DELAY	D. FINE H			1000
	il dana sesat su dana sesat			DEPTH LSI FEEDBACK VSI	B 0 100		2BH 2CH			21 L58		D. TIME I			
	60 0000 000a 78 0ana adam			FEEDBACK I.S			208			22 LSB		D. TIME I			
	78 OATH ANDAL 88 0000 000st						2EH			23 458		FEECHACK	428	. 0	
	9Н Озав зана	4 Par 36 LS1	3	REV TIME LS	H (0.1 20,0s)		2FH			13 LSB		FEEDBACK			102
	AH 0000 000a			PRE DELAY WS			301			24 MSB		LEVEL	USB USB		190
	ВВ Оады дава! Си одом доон:			PRE DELAY 1.S 1.PF VS	B R 0 10		311	V Сави язваК	rar	24 LSB		LFVLL	1.38	•	
1	CH 0000 000a	s Par 3A NSI													

```
36H: 0000_000aB | Par 27 MSB | CHORUS | PRE DELAY MSB | 0 - 60
       37H: Osaa_sasaB | Par 27 LSB
                                          PRE DELAY LSB
                                                                                       73H: Casa_sassB : Kase 12
       388: 0000_000a8 : Par 28 WSB
                                          RATE
                                                  MSB 0 - 100
                                                                                       74H: 0000_0000B : End Of Name
       39Hi Dasa_sasaB ! Par 25 L5B
                                                                                       75H: 0000_0000B | END of Data
                                                  LSB
       3AH: 0000_000aB : Par 29 MSB
                                                  MSB 0 - 100
                                          DEPTH
       38H: Gama_maaa8 : Par 29 LSB
                                          DEPTH
                                                  LSB
                                                                                * Table 24
       40H: 0000_000aB | Par 32 MSB | REVERB | REV TIME MSB 0 - 199
                                                                                2CH MIXER
       41H: 0aaa_aaaa8 | Par 32 LSB
                                         REV. TIME LSB (0. 1-20. 0s)
       42R: 0000_000a8 ! Par 33 HSB
                                         PRE DELAY MSB 0 - 200
                                                                                Offset
                                                                                Address
       43H: 0aas_aasa8 : Par 33 LSB
                                          PRE DELAY LSB
                                                                                                Description
                                                  ¥SB 0 - 10
       4481 0000_000a8 : Par 34 MSB
                                         LPF
                                                                                45H: Oama_mamma : Par 34 LSB
                                         LPF
                                                  LSB (500Hz, THRU)
                                                                                       00H; 0001_01i18 ! algorithm 23
       468: 0000_000a8 : Par 35 WSB
                                         LEVEL
                                                                                       01H: 0000_0000B : DUNNY
                                                  MSB 0 - 100
       47HI Gasa_sasaB I Par 35 LSB
                                         LEVEL
                                                  LSB
                                                  MSB 8 - 100
       48HI 0000_000aB i Par 36 USB WASTER LEVEL
                                                                                       04HI 0000_000aB | Par 2 MSB CH 1
                                                                                                                          LOW EQ NSB 0 - 24
       49H! Casa_ssas ! Par 36 LSB
                                         LEVEL
                                                  LSB
                                                                                       05HI Qaaa_aaaaB | Par 2 LSB
                                                                                                                          LOW EQ LSB (-12-+12dB)
                                                                                       06H1 0000_000aB 1 Par 3 WSB
                                                                                                                          MID FREQ MSB 0 - 12
       50HI 0000_000aB ! Par 40 MSB MIDI CNT RECEIVE MSB 0 - 66
                                                                                       07Hi Qaaa_asaaB | Par 3 LSB
                                                                                                                          MID FREQ LSB (250Hz-4kHz)
                                                                                                                          MID EQ MSB 0 - 24
MID EQ LSB (-12-+12dB)
       51Hi Gasa_sasaB i Par 40 LSB
                                         RECEIVE LSB
                                                                                       08KI 0000_000aB | Par 4 MSB
                                                (DFF. AF. TOUCH, P. BEND. :
                                                                                       09HI Osas_sasaB i Par 4 LSB
                                                                                                                                  LSB (-12-+12dB)
                                                20 - 231, 264 - 295)
                                                                                       OARI 0000 000aB i Par 5 MSR
                                                                                                                          HIGH ED MSR 0 - 74
                                                                                       OBKi Osam assaB : Par 5 LSB
                                                                                                                          HIGH EQ LSB (-12--12dB)
       54H: 0000_000aB : Par 42 MSB MIDE CNT ASSIGN MSB 0 - 3
                                                                                                                          NS THRES. MSB 0 - 100
                                                                                       OCHI 0000_000aB / Par & WSB
                                         ASSIGN
       35H: Caam ammaß ! Par 42 LSB
                                                  LSB
                                                                                       ODKI Osas sasaB : Par & LSB
                                                                                                                          XS THRES. LSB
                                                                                       OEK! 0000_000aB ' Par 7 MSB
                                                                                                                          X2 METE 7728 0 - 100
       58H: 0000_000aB . Par 44 USB - VIDI CXT NIX
                                                  MSB 0 - 100 Table39:
                                                                                       OFM: Qaaa_aaaaB Par 7 LSB
                                                                                                                          NS RELE. LSB
                                     MIK
       59H: Gasa_sasaB . Par 44 LSB
                                                  LSB
                                                                                       12H . 0000 000aB Par 9 458
                                                                                                                          REV LEVEL MSB 0 - 100
       5CH! 0000_0008B : Par 46 WSB WIDE CNT MAX
                                                  MSB 0 - 100
                                                                                       13H! Osaa aasaB Par 9 LSB
                                                                                                                          REV LEVEL LSB
       3081 Ozaa_aaaa8 : Par 46 1.5B
                                         MAX
                                                  LSR
                                                                                       14M: 0000 000aB Par 10 MSB
                                                                                                                          DLY LEVEL MSB G - 100
                                                                                       1581 Daga agga8 : Par 10 1.58
                                                                                                                          DLY LEVEL LSR
      SSR: Casa asasB : \ame 1
                                                                                       1681 0000 000aB Par 11 WSB
                                                                                                                          CHO LEVEL MSB 0 - 100
                                                                                                                          CHO LEVEL LSB
                                                                                       17H1 082a_a8888 Par 11 LSB
       738: Oasa sasaB : Name 12
                                                                                       18H: 0000 000aB - Par 12 WSB
                                                                                                                          PAS
                                                                                                                              MSB 0 - 100
       74H1 0000 0000B : End Of Name
                                                                                       19H: 0asa_aasa8 + Par 12 L58
                                                                                                                                  LSB
      75H: 0000 0000B | EXD Of Data
                                                                                       IAH 0000 000aB . Par 13 MSR
                                                                                                                          LEVEL
                                                                                                                                  MSB G - 100
                                                                                       IBHI Dasa_aasaB : Par 13 LSB
                                                                                                                          LEVEL
Table 39
tEH: 0000_000a8 . Par 15 MSB CH 2
                                                                                                                          LOW EQ
                                                                                                                                  MSB 0 - 24
                                        ALDI CAT MINAMAS
                                                                                       IFH: Casa_assaB Par 15 LSB
                                                                                                                          LOW EQ LSB (-12--12dB)
20H! 0000 000aB Par 16 WSB
                                                                                                                          WID FREQ MSB 0 - 12
        WIDS CAT ASSIGN O DELAY SEVER
                                             0 - 100
                                                                                       218: Qaam_amaaB - Par 16 LSB
                                                                                                                          MID FREQ LSB (250Hz-4kHz)
                                         0 - 100
                      E CHORUS RATE
                                                                                                                          ALD ED
                                                                                       22R: 0000 000aB Par 17 MSB
                                                                                                                                  VISB 0 - 24
                      2 REVERB LEVEL
                                        ; 0 - 100
                                                                                       2311 Oman amama Par 17 LSR
                                                                                                                          WED EQ
                                                                                                                                  USB (-12--17dB)
                      3 - MASTER LEVEL > 0 - 100
                                                                                       24H: 0000_000aB . Par 18 WSB
                                                                                                                          HIGH EQ
                                                                                                                                  MSB 0 - 24
                                                                                       25#! Oaaa aasaB Par 18 L5B
                                                                                                                          HIGH EQ LSB (-12--12dB)
                                                                                       26H) 0000 000aB : Par 19 MSB
                                                                                                                          SS THRES. MSB 0 - 100
                                                                                       27H; Oasa asaaB ' Par 19 L5B
                                                                                                                          NS THRES. LSB
STEREO ENHANCER
                                                                                       28H: 0000 000aB : Par 20 MSR
                                                                                                                          NS RELE. MSB 0 - 100
                                                                                       29Hi Gasa_sasaB : Par 20 LSB
                                                                                                                          NS RELE. LSB
                                                                                       2AH: 0000_000aB : Par 21 MSB
                                                                                                                          REV LEVEL WSB 0 - 100
 Address
                                                                                       ZBH: Oaaa_aaaaB . Par 21 LSB
               Description
                                                                                                                          REV LEVEL LSB
., ......
                                                                                       2CH; 0000_000aB Par 22 USB
                                                                                                                          DLY LEVEL MSB 0 - 100
      00H 0001 0110B algorithm 22
                                                                                       2DH: Gaaa aaaa8 Par 22 LSB
                                                                                                                          DLY LEVEL LSB
      DIR: CODO COCOR DUMAN
                                                                                       2EH1 0000_000aB Par 23 MSB
                                                                                                                          CHO LEVEL WSB 0 - 100
      OZH: 0000_000a8 Par I USB EFFECT OX/OFF USB
                                                                                       2FH: Qasa aaaa8 Par 23 LSB
                                                                                                                          CHO LEVEL LSB
                                        ON/OFF LSB
      03H+ 0bc0 00008 Par 1 LS8
                                                                                       30H* 0000 000aB Par 24 WSB
                                                                                                                                  VISB 0 - 100
                                       31H' Oasa_sassB Par 24 LSB
                                                                                                                          PAN
                                                                                                                                  LSB
                                                                                       32H: 0000_000aB 'Par 25 MSB
                                                                                                                          LEVEL
                                                                                                                                 001 0 B2N
                                       c : X. SUPPRESSOR OFF/OX 0 / t
                                                                                       Hassa saso *HEE
                                                                                                     Par 25 L5B
                                                                                                                          LEVEL
                                                                                                                                  LSB
      04H 0000 000a8 Par 2 WSH LIMITER THRESHOLD WSR 0 - 100
      OSH Gasa assas Par 2 LSR
                                         THRESHOLD LSB
                                                                                       06H' 0000 000aB : Par 3 VSH
                                         BATTO MSB 0 - 3
                                                                                       37H Qaaa saaa8
                                                                                                      Par 27 LSB
                                                                                                                          REV TIME LSB (0.1-20.0s)
      07H: Gasa sasaB Par 3 ISB
                                         RATIO
                                                  LSB (2:1, 20:1)
                                                                                       38H 0000 000aB
                                                                                                      Par 28 MSB
                                                                                                                          PRE DELAY NSB 0 - 200
                                         RELEASE MSB 0 - 100
      Secco_0000 :N80
                      Par 4 MSH
                                                                                       398 Oaan auaaR
                                                                                                      Par 28 LSB
                                                                                                                          PRE DELAY LSB
      Con Casa assas
                      Par 4 LSR
                                         RELEASE LSR
                                                                                       3AR 0000 000aB
                                                                                                      Par 29 NSB
                                                                                                                          ; PF
                                                                                                                                  MSB 0 10
                                         LEVEL
      0AH- 0000_000aB
                      Par 5 NSB
                                                  WSB 0 100
                                                                                       ЗВИ Озая вяжаВ
                                                                                                      Par 29 LSB
                                                                                                                          LPF
                                                                                                                                  LSB (SDORZ-THRL)
      OBH Oaaa_aaaaB
                      Par 5 LSB
                                         LEVEL
                                                  LSB
                                                                                       3CH 0000 000aB
                                                                                                      Par 30 MSB
                                                                                                                                 MSB 0 - 100
                                                                                                                          LEVEL
                                                                                       ЗВК Озав авааВ
                                                                                                     Par 30 LSB
                                                                                                                                 1.SB
                                                                                                                          LEVEL
      12H 0000_000aB Par 9 WSB EXHANCER SENS
                                                  MSB 0 100
      13# Casa sasaB
                      Par 9 LSB
                                         SENS
                                                LSB
                                                                                       40K 0000 000aR
                                                                                                     Par 32 MSB DL TAP L D. TIME H MSB 0 1200
      14H 0000_000a8
                                         LON MIX MSB 0 120
                      Par 10 458
                                                                                       41К Оаян анааВ
                                                                                                      Par 32 LSB
                                                                                                                          D. TIME R. 15R.
       15H Casa sasaR
                      Par 10 LSB
                                         LOW MIX LSB
                                                                                       42H 0000 000aR
                                                                                                       Par 33 MSB
                                                                                                                          O TIME I USA
      16H 0000 000aB
                      Par 11 458
                                         RIGH WIN MSR 0 100
                                                                                       43К Овна наваР
                                                                                                      Par 33 1 SB
                                                                                                                          D. TIME L. LSB
      17H Dans_asaa8
                      Par 11 USB
                                         HIGH MIX LSB
                                                                                       44H 2000 000aR
                                                                                                      Par 34 MSB
                                                                                                                          LEVEL
                                                                                                                                  MSB 0 100
                                                                                       45B Oasa anas8
                                                                                                                          LEVEL
                                                                                                     Par 34 1.5B
                                                                                                                                 1.58
      1EH 0000 000aB
                      Par 15 MSR V.S.
                                         THRESHOLD WSB 0 100
      iFM Gama_amaa8
                      Par 15 1.58
                                         THRESHOLD LSB
                                                                                       18H 4000 000×4
                                                                                                      Par 35 MSR | DE TAP R D. 11ME H | MSR | 0 | 1200
      10H 0000 000aR
                      Par 16 NS8
                                         RELEASE MSH 0 100
                                                                                       19li Casa nanaé
                                                                                                      Par 35 LSB
                                                                                                                          D. TIME R J.SB
      218: Oaza aasaB
                      Par 16 1.SB
                                         RELEASE LSR
                                                                                       44d 0000 000a8
                                                                                                      Par 37 MSB
                                                                                                                          D. TIME L MSB
                                                                                       400 Saaa aasaii
                                                                                                      Par 37 iSB
                                                                                                                          D. TIME 1 USB
      2AR 0000_000AH Par 21 WSB WISTER LEVEL
                                                  นรถ
                                                                                       408 0000 000aB
                                                                                                      Par 35 MSB
                                                                                                                          LEVEL
                                                                                                                                   MSB 9 100
      28H Daga aasab Par 23 LSB
                                         LEVEL
                                                  158
                                                                                       100 Onan nanaR
                                                                                                      Par 38 USB
                                                                                                                          LEVEL
                                                                                                                                  1.58
      689 Oaaa aaaaB \ame 1
                                                                                       30# 0000 000#H Par 40 MSH OL TAP C O. TIME H MSR # 1200
```

```
* Table 26
                                        D. TIME H LSB
     SIN: Gama_amma : Par 40 LSB
                                                                              GATE - REVERB
                                        D. TIME L MSB
     52H: 0600_000aB : Par 41 MSB
                                         D. TIME L LSB
     53Hi Casa_aaaaB ! Par 41 LSB
                                                                               : Offset
                                         FEEDBACK MSB 0 - 100
     34H; 0000 000a8 : Par 42 MSB
                                                                                              Description
                                                                               Address
                                         FEEDBACK LSB
      55Hi Qana_aanaB | Par 42 LSB
                                                                               ------
                                         LEVEL
                                                 MSB 0 - 100
      56H- 0000 000a8 : Par 43 %58
                                                                                      00H1 0001_1001B : algorithm 25
                                                 LSB
                                         LEVEL
      57H: 0aaa_asaa8 : Par 43 LS8
                                                 NSB 0 - 10
                                                                                     OTH! GOOD DOOD : DUMNY
                                         LPF
      588: 0000_000a8 ; Par 44 MS8 DELAY
                                                 LSB (SOOHz-THRU)
                                         LPF
      39H: Qaaa aaaaB : Par 44 LSB
                                                                                      04H1 0000_000a8 1 Par 2 MS8 GATE REV GATE TIME MSB 0 - 39
                                                                                                                         GATE TIME LSB (5 - 200)
                                                                                      05H! Casa_asaaB | Par 2 LSB
      5CH: 0000_000aB . Par 46 MSB CHORUS PRE DELAY MSB 0 - 50
                                                                                                                         PRE DELAY MSS 0 - 200
                                                                                      05H1 0000_000aB : Par 3 MSB
                                         PRE DELAY LSB
      SDH: Daga_aggaB ; Par 46 LSB
                                                                                                                         PRE DELAY LSB
                                                                                      07H; Oasa_sasaB : Par 3 LSB
                                                                                                                         LPF MSB 0 - 10
                                                                                      08H| 0000_000aB | Par 4 MSB
                                                  MSR 0 - 100
      60H1 0000 000aB ! Par 48 MSB
                                                                                                                                  LSB (SOOHZ-THRU)
                                                                                      09H: Qasa_assa8 ! Par 4 LSB
                                                                                                                         LPF
                                                  LS8
                                         RATE
      61H! Daga_assaB + Par 48 LSB
                                                                                                                                  MSB 0 - 11
                                                                                      OARI 0000_000aB 1 Par 5 WSB
                                                                                                                         KPF
                                                  MSB 0 - 100
                                         DEPTH
      62H: 0000 800aB : Par 49 MSB
                                                                                                                                  LSB (THRU-IKHZ)
                                                                                                                         HPF
                                                                                      OBNI Osaa_asaaB i Par 5 LSB
      638| Dama_mama8 ! Par 49 LSB
                                         DEPTH
                                                  LSB
                                                                                                                         LEVEL MSB 0 - 100
                                                                                       OCHI 0080_000a8 | Par 6 MSB
                                                  MSB 0 - 100
      64H; 0000 COOAB ; Par 50 MSB MASTER
                                         LEVEL
                                                                                                                         LÉVEL LS8
                                                                                       ODHI Gaza_aasa8 : Par 6 LSB
                                                  LSB
      65H) 0maa_mama8 : Par 50 LSB
                                          LEVEL
                                                                                       12HI 0000_000aB : Par 9 WSB REVERB REV TIME MSB 0 - 199
      68H: Gaaz_aaaaB : Name 1
                                                                                                                          REV TIME LSB (0.1-20.0s)
                                                                                       1381 Gaas_asaaB i Par 9 LSB
                                                                                                                          PRF DELAY MSB 6 - 200
                                                                                       1491 0000 000a8 : Par 10 458
      73H: Qaaa aaaaB Xame 12
                                                                                                                         PRE DELAY LSB
                                                                                       [5H: Qaaa_aaaaB : Par 10 L5B
      71H 0000 00008 End 01 Name
                                                                                                                          HE DAMP MSB 0 - 9
                                                                                       16H! 0000 000a8 - Par 1! WSB
      75H: 0000 0000B END Of Data
                                                                                                                          HF DAMP LSB (0.1-1.0)
                                                                                       1781 Gama ammaB . Par 11 158
                                                                                       1EH: 0000 000a8 . Par Li MSB
                                                                                                                                   LSB (500Hz-THRU)
* Table 25
                                                                                        IFK: Qaaa aaaa8 Par to LSB
                                                                                                                          LPF
REVERBI - REVERB2
                                                                                                                          RPF
                                                                                                                                   WSB 0 - 11
_____
                                                                                       20H 0000_000aB Par 16 MSB
                                                                                                                                   LSB (THRU-1kHz)
                                                                                        21H: Gasa_sasaB : Par 15 LSB
 Offset -
                                                                                                                          LEVEL
                                                                                                                                   001 0 BZW
                                                                                       27H: 0000 000aB - Par 17 MSB
               Description
 Address
                                                                                                                          LEVEL
                                                                                                                                   LSB
                                                                                       23H! Qaaa aaaaB Par 17 LSB
      08H; 0001 10008 - algorithm 24
                                                                                        ZAHI 0000_000aB - Par 21 4SE OUTPUT NODE
                                                                                                                                   VSB 0 - i
      01H: 0000_0000B DUMAY
                                                                                                                                LSB (NONOX2, STEREO)
                                                                                                                          MODE
                                                                                       ZBH: Oaaa aaaaB Par 21 LSB
       04H 0000_000a8 Par 2 MSB REVERB | REV TIME MSB 0 - 199
                                                                                        36Hi 0000_0004B - Par 27 MSB DIRECT LEVEL L MSB 0 - 100
                                          REV TIME LSB (8.1-20.0s)
       05H Dasa_aaaa8 Par 2 LS8
                                                                                        37H: 0aaa_aasaB Par 27 LSS
                                                                                                                          LEVEL I. LSB
                                          PRE DELAY MSB 0 - 200
       06H- 0000_000a8 Par 3 WSB
                                                                                        38H: 0000_000a8 Par 28 45B
                                                                                                                          LEVEL R WSB 0 100
                                          PRE DELAY LSB
       07H Gasa_sass Par 3 LSB
                                                                                                                          TEAET 8 T28
                                          HF DAMP WSB 0 - 9
                                                                                        198: Oaaa aaaa8 : Par 28 L58
       088: 0005_000aB Par 4 MS8
                                          HF DAMP LSB (0.1-1.0)
       09B Gaaa_saaaB Par 4 LSB
                                                                                        40H; 0000 GGOAB : PAR 32 USB MASTER LEVEL L USB 0 - 100
                                                                                                                           LEVEL L LSB
                                                                                        41H1 Casa_sassB : Par 32 LSB
                                                   NSB 0 - 10
       12H: 0000_000aB : Par 9 MSB
                                          IPF
                                                                                                                           LEVEL 8 USB 0 100
                                                                                        42H) 0000 000aB Par 33 MSB
                                                   LSB (500Hz-THRU)
       ISH! Gaaa_aasad . Par 9 LSB
                                          LPF
                                                                                                                           LEVEL R LS8
                                                                                        43%' Casa_sasaB : Par 33 15B
                                                   MSB 0 - 11
       (all: 0000 000a8 : Par 10 MS8
                                          RPE
                                                   LSB (THRU-1kHz)
                                          HPF
       15H: Qaaa_saaaB · Par 10 LSB
                                                                                        68H: Oaga asaaB Name 1
                                                   MSB 0 - 100
       16H 0000_000aB : Par II NSB
                                          LEVEL
       17H Oaga_aaga8 Par 11 LSB
                                                  LSB
                                          LEVEL.
                                                                                        13Hi Daga agaaB Name 12
                                                                                        748: 0000_0000B End Of Vame
        1EH 0000_000aB Par 15 MSB REVERB 2 REV TIME MSB 0 - 199
                                                                                        75H- DOGO DOBOR EXD Of Data
                                          REV TIME LSB (0.1-20.0s)
        821 či nek Bassa, asso. KR
                                          PRE DELAY MER 0 - 200
        20H 0000_000aB
                       Par 16 N5B
                                           PRE DELAY LSB
        21H Qaaa_aaaa8 Par 16 LSB
                                          HF DAMP MS8 0 - 9
                                                                                 * Table 27
        22H 0000 DODAB
                       Par 17 MSB
                                                                                 CHORUS - REVERB
                                          RF DAMP LSB (0.1-1.0)
        23B 0aaa_aaaa8 Par 17 LSB
                                                                                           MSB 0 - 10
                                                                                   Offset
                                           f PF
        2AH 0000_000aH
                      Par 21 MSH
                                                                                                 Description
                                                    USB (SOOHz-THRU)
                                                                                   Address
                                           LPF
        2BH Oada adaa8
                      Par 21 USB
                                                                                  ----
                                           HPF
                                                    WSB 0 - 11
        2CH 0000 000aB
                      Par 22 VSB
                                                                                        00H 0001 1010B - aigorith# 16
                                                    LSR (THRL-1kHz)
                                           KPF
        20H Oaaa_aaaa8 Par 22 LSB
                                                                                        0181 0000 0000H DEMAN
                                                    MS8 0 100
        2EH 0000 000aB Par 23 MSB
                                           LEVEL
        258 - QawalaaaaB - Par 23 LSB
                                           LEVEL
                                                   158
                                                                                        04H - 0000 000aB - Par 2 MSE - CHORLS - PRE DELAY MSB - 0 - 60
                                                                                                                            PRE DELAY 158
                                                                                         05H1 0asa asaa8 Par 2 155
        35H 0000_000aB Par 27 WSB OUTPLE WODE
                                                    WSB 0 - 1
                                                                                                                            RATE USB 0 - 100
                                                                                         06H 0000 000aB Par 3 WSE
                                                    LSB (MOXOx2, STEREO)
        378 Oasa aasa8 Par 27 LSR
                                           NODE
                                                                                                                                    USB
                                                                                        оти озна назав Наг в 138
                                                                                                                            RATE
                                                                                                                                   USB 0 100
                                                                                         OBH 0000 000aB Par- 4 VSE
                                                                                                                            DEPTH
        10H- 0000 000aB Par 32 MSR DIRECT LEVEL L MSB 0 - 100
                                                                                                                                   158
                                                                                        09H 0aas aasab Par 4 155
                                                                                                                            DEPTH
                                           LEVEL L LSB
        110 0aaa 3aaa8 Par 32 L58
                                                                                                                            LEVEL
                                                                                                                                    use 0 100
                                                                                        OAH 0000,000aR Par 5 WSB
                                            LEVEL R 458 0 100
        12H 0000 000aB Par 33 USB
                                                                                        OSH Qana annah Par 5 13P
                                                                                                                            LEVEL.
                                                                                                                                   Sti
                                            LEVEL R LSR
        10H Oaau aasaB Par 30 USB
                                                                                         128 0000 000aB Par 9 215 REVERB REV TIME MSE 2 199
         43H 0000 000aH Par 36 MSB MISTER LEVEL I. MSB 0 100
                                                                                                                            REA TIME LIST (0 1 20.08)
                                                                                         138 Casa asaaB Far 4 . F
                                            LEVEL L. USB
         498 Jana Assall Par 36 LSB
                                                                                                                            PRE DEL AL MSH 0 100
                                                                                         148 0000 000aB Par 15 VSF
                                            LEVEL R MSR 0 100
         448 0000 000aB Par 37 WSR
                                                                                         150 Олан ольян. Рат 10 (5)
                                                                                                                            PRE DELLAY USB
                                            LEVEL R 1.58
         t88 - Oana aana8 - Par 37 USB
                                                                                         He000 0000 HAI
                                                                                                                            \mathbf{HF}(\mathbf{DAMP}) = \mathbf{4SB} = \mathbf{0} = \mathbf{0}
                                                                                                         Pat L. Mor
                                                                                                                            HE DAMP (LSH (0.1-1.0)
                                                                                         178 Gaga gawah Par II USY
         5мн Ваан авлаВ Алме 1
                                                                                                                            LOW LEVEL VIST () 24
                                                                                         188 0000 000aB Far 12 Vis
                                                                                                                            LUN (EVEL (SB ( 12 - 1268)
                                                                                          198 Assa assaR Par 12 198
         73н онин данаВ Авме 12
                                                                                                                            101 LEVEL MS8 0 - 14
                                                                                         130 0000 0000 Par 13 VI-
         74H 0000 00008 End Of Name
                                                                                                                            81 LEVEL USB ( 12 +12000
                                                                                          189 Jaan basaR - Pat 13 135
         75H GOOD DOODB END OF Data
                                                                                                                            Lin
                                                                                          168 0000 00008 Far to Web
                                                                                                                                    LSA (SOURZ-THEE)
                                                                                          1FW Onas oasaB Par il 199
                                                                                                                            LPU
                                                                                                                                      WSB 0 11
                                                                                                                            HPF
                                                                                          208 0000 000AN Par is Vit
```

```
21Ht Oaaa_aaaaB i Par 16 LSB
                                      HPF
                                               LSB (THRU-1kHz)
22H: 0000_000aB : Par 17 MS8
                                      LEVEL
                                               MSB 0 - 100
23Hi Osaa_sasaB | Par 17 LSB
                                      LEVEL
                                               LSB
2AH: 0000_000aB | Par 21 USB | GUTPUT
                                      MODE
                                               MSB 0 - 1
28H: Oasa_asaaB : Par 21 LSB
                                      MODE
                                               LSB (MOXOx2, STEREO) ;
35H1 0000_000aB : Par 27 MSB DIRECT
                                     LEVEL L MSB 0 - 100
37HI Gaza_asaaB I Par 27 LSB
                                      LEVEL L LSB
38H: 0000_000aB i Par 28 MSB
                                      LEVEL R MSB 0 - 100
39H: Oaaa_aaaaB ' Par 28 LSB
                                      LEVEL R LSB
40H1 0000_000aB | Par 32 MSB | MASTER | LEVEL L | MSB | 0 - 100
41H! Casa_asasB ! Par 32 LSB
                                      LEVEL L LSB
42H1 0000_000aB i Par 33 4SB
                                      LEVEL R MSB 0 - 100
43H: Oasa_sasaB i Par 33 LSB
                                      LEVEL R LSB
68H1 Oaaa_aaaaB : Xaee |
73Hi Daas_aasaB i Kame 12
74H; 0000_0000B : End Of Name
75H: 0000_0000B . END Of Data
```

* Table 28 DELAY - REVERB

Offset						
Address	Descrip	tion				
				· • - • - •		
	0001_1011B					
	0000_0000B					
•••	0000_0000	DUAL N				
DAH:	none noneR	Par 2 WSB	DI TAP 1	n tiue w	บรถ	0 - 1200
	Oaaa_aaaaB		DE INC L	D. TIME H		0 - 1100
	0000_000aB			D. TIME L		
	0aaa_aaaaB :			D. TIME L		
	0000_000a8			LEVEL		0 - 100
	Casa_sass					0 - 100
O S R Y	4999 - 99890	701 4 E30		LEVEL	LSB	
1381	0000 0000	Par 9 USB	DI T10 0	6 THE H	HEB	0 - 1200
	Daga_aaaaB		DE SAF E	D. TIME R		0 - 1200
	0000_000aB			D. TIME L		
	Casa_sass					
				D. TIME L		B 188
	0000_000a8					D - 100
1.444	Casa_assa8	Sat II F2R		LEVEL	LS8	
16"	2000 000-4	g 15 mee	0) *** *	* *INF "		
		Par 15 WSB	DL TAP C			0 - 1200
	0aza_assaB :			D. TIME R		
	0000_000aB :			D. TIME L		
	Gess seed			D. TIME L		
	0000_000aB			FEEDBACK		0 - 100
	Gasa_sasa			FEEDBACK		
	0000_000aB					0 - 100
J≥H	Qaaa_aaaB	Par 18 1.56		LEVEL	F28	

	85000_0000		DELAY	LPF	MSB	0 - 10
BH	Онаа анааВ	Par 21 LSB		LPF	ΓŹΒ	(SOOHZ-THRU)
	0000_000aB		REVERB	REA LIME		
	Qaaa_aaaaB					(0.1-20.0s)
	0000_00CaB			PRE DELAY		0 - 200
	Oaaa_aaaaB			PRE DELAY		
	0000,00048			HF DAMP		0 - 9
	Gaaa_aaaa5			HF DAMP		(0, 1-1, 0)
	0000_000aB			LOW LEVEL		
	Фаза азааВ			LOW LEVEL	1.58	(-1217dB)
	0000 000aB			HI LEVEL	чѕв	0 - 24
	Оана венав			MI LEVEL	LSB	(+12++12d8)
108	0000,000aB	Par 32 MSR		LPF	asa	0 - 10
	0aaa_aaaa6				LSB	(500Hz-THHC)
128	0000,000a8				458	0 11
138	Ован анаав	Par 33 LSB		HPF	:SB	(THPL-1kHz)
111	0000,000aB	Par 34 988		LEVEL	VCS8	0 100
129	бира шицав	Par J4 L5B		CEVER.	1.50	
181	98000 000aR	Par 36 VSR	GLTPL ?	ACDF.	นรธ	0 i
1911	Олин_липаВ	Par 36 1.SR		MODE	LSB	(NONDAZ, STEREO)
36H	9600 000aF	Par 10 MSR	DIRECT	LEVEL L	MSR	0 100
	Sasa aaaaB			LEVEL L	LSB	
	0000 000aR			SEVEL R	VSB	0 :00
		Par 41 LS8		LEVEL R	LSH	
	9000 00048		WASTER	LEVEL 4	RSH	
	Cana nanafi			LEVEL L	1.58	
	0000_000a8			LEVEL R	ush	0 100
2011	2274 4448	· · · · · · · · · · · · · · · · · · ·		14. TEL. 11	430	Q 100

٠	57H	Oass_sassB	ı	Par 43 LSB	LEVEL R	LSB	
F	ŧ		į				Ţ
ŧ	68H;	Gasa_sasa8	i	Name 1			:
1	: 1		!	:			
!	73H1	Оааа_ааааВ	í	Kame 12			
;	7411	0000_0000B	L	End Of Name			
ţ	75H1	0000_00008	ı	END Of Data			
			~ ~				

Model SE-50

MIDI Implementation Chart

Date : Jul. 18 1990

Version: 1.00

	Function · · ·	Transmitted	Recognized	Remarks
	Default Changed	1 - 16 1 - 16	1 - 16 1 - 16	Memorized * 1
Mode	Default Messages Altered	× × ******	OMNI ON/OFF	Memorized
Note Number	True Voice	× *****	×	
Velocity	Note ON Note OFF	× ×	×	
After Touch	Key's Ch's	× ×	* 2	*3
Pitch Bender		×	* 2	*3
Control `Change	0 - 31 64 - 95	×	*2	*3
Prog Change	True #	× ******	0 - 127 0 - 127	·
System Exc	clusive	0	0	Parameter value
System Common	Song Pos Song Sel Tune	× × ×	× × ×	
System Real Time	Clock Commands	×	×	
Aux Messages	Local ON/OFF All Notes OFF Active Sense Reset	× × ×	× × ×	
Notes		one of them. * 2 Can be set m * 3 Made controlla	is common to transmitting anually to O or ×, and puble by specifying one parameter is to be deter	articular parameter.

Mode 1 : OMNI ON, POLY Mode 3 : OMNI OFF, POLY Mode 2: OMNI ON, MONO Mode 4: OMNI OFF, MONO O: Yes x: No

■ How to read a MIDI Implementation Chart

O: MIDI data that can be transmitted or received.

x: MIDI data that cannot be transmitted or received.

Basic Channel

The MIDI channel for transmitting (or receiving) MIDI data can be specified over this range. The MIDI channel setting is remembered even when the power is turned off.

Mode

Most recent keyboard use mode 3 (omni off, poly).

Reception: MIDI data is received only on the specified channels, and played polyphonically.

Transmission: All MIDI data is transmitted on the specified MIDI channel.

* "Mode" refers to MIDI Mode messages.

Note Number

This is the range of note numbers that can be transmitted (or received). Note number 60 is middle C (C4).

Velocity

This is the range over which velocity can be transmitted (or received) by Note On and Note Off messages.

Aftertouch

Key's: Polyphonic Aftertouch Ch's: Channel Aftertouch

Pitch Bender

The bender range setting of each Tone determines the range of pitch change caused by Pitch Bender messages. When set to 0, Pitch Bender messages will be ignored.

■ Control Change

This indicates the control numbers that can be transmitted (or received), and what they will control. For details, refer to the MIDI implementation.

Program Change

The program numbers in the chart indicate the actual data. (This is one less than the Pitch and Tone program numbers.)

Exclusive

Exclusive message reception can be turned On/Off.

Common, Real time

These MIDI messages are used to synchronize sequencers and rhythm machines. The SE-50 dose not use these messages.

Aux messages

Mainly, these messages are of the type used to prevent problems, such as Active Sensing (Checks whether MIDI cable is in proper condition or not); and All Notes Off (Message which terminates the sounding of all notes).

SPECIFICATIONS

SE - 50:STEREO EFFECTS PROCESSOR
● Patch Memories User's Memories
● Signal Processing A/D Convertor 16bit D/A Convertor 16bit
● Sampling Frequency 48kHz/32kHz(set every algorithm)
● Rated Input Level - 20/+4dBm
$lacktriangle$ Input Impedance IM Ω
● Rated Output Level - 20/+4dBm
lacktriangle Output Load Impedance More than 50k Ω
● Frequency Responce 20Hz to 20kHz(:\dB) (Sampling Frequency:48kHz) 20Hz to 15kHz(:\dB) (Sampling Frequency:32kHz)
● Residual Noise Less than - 95dBm (IHF - A) (LEVEL Switch: - 20dBm, THRU)

Input Channel

2

Input Gain

- 20dB to +12dB

(0dBm=0.775Vrms)

Output Channel

2

Controls

«Front Panel»

INPUT LEVEL Knobs L (MONO)/R NUMBER Buttons UP/DOWN PARAMETER Buttons UP/DOWN VALUE Buttons UP/DOWN WRITE Button **EXIT Button**

UTILITY Button EFFECT Button POWER Switch «Rear Panel»

LEVEL Switch

Display

16 - letters, 2 - lines LCD (back lit)

Indicator Overload L/R Effect On/Off Utility

Jacks

INPUT Jacks L(MONO)/R OUTPUT Jacks L(MONO)/R EFFECT REMOTE Jack NUMBER SHIFT Jack MIDI Connectors (IN, OUT) AC Adaptor Jack

Power

12V AC (BOSS BRB - 120, 220, 240)

Current Draw

lΑ

Dimensions

 $218(W) \times 44(H) \times 235(D)$ mm $8 - 5/8"(W) \times 1 - 3/4"(H) \times 9 - 5/16"(D)$

Weight

1.6kg / 3lb 9oz

Accessories

AC Adaptor:BOSS BRB - 120, 220, 240 Foot Rubber × 4

Owner's Manual

Options

*The specifications for this product are subject to change without prior notice, in the interest of improvement.

Index

[1,2,3]	[G]	
2CH MIXER77	GATE REVERB+REVERB	83
F. 7	GATE REVERB	33,83
[A]	GUITAR MULTI ·····	
	Gate····	
AC Adaptor Jack 8	Gate Reverb ·····	33,83
AMBIENCE31	Full	
Aftertouch Message	[H]	
Algorithm		
Altering an Existing Effects Program	HALL I	
Altering the Name of Effects Program21 Ambience31	HALL 2····	
Ambience	HF Damp ·····	
[c]	High - pass Filter	24
CHORUS+REVERB85		
Composition of Effects Programs17	INPUT JACK L(MONO)/R ·····	7
Compressor ······68	Input Level ·····	7,12
Control Change Message93	Input Level Knob ·····	7
Copying an Effects Program 19	-	
[n]	[K]	
[D]		
DCI AV DCI (CD)	KEYBOARD MULTI I	
DELAY+REVERB87	KEYBOARD MULTI 2 ·····	61
Data Reception(Bulk Load) 103	r. 3	
Data Transmission(Bulk Dump) 102	[L]	
Delay		
Delay Tap 39,78 Direct Level 26	Late Reflection	
Display	Level Switch	
Оізріау	Limiter	
(E)	Line Driver	
	Low - pass Filter ·····	24
EFFECT Button 7	[M]	
EFFECT REMOTE Jack ····· 8		
EXIT Button ···································	MIDI Channel ·····	02 05
Early Reflection23	MIDI Control ·····	
Early Reflection Delay23	MIDI IN Connector ·····	
Effect Off Mode15	MIDI Implementation·····	_
Effect On/Off ······15	MIDI Implementation Chart	
Enhancer72.75	MIDI OUT Connector	
Equalizer58	MULTI DELAY	- 37
Exclusive Message 93	MULTI TAP DELAY	_
P _N	MULTI PITCH SHIFTER ·····	
(F)	Making the Connection	
	Master Level ·····	
Factory Preset·····108		23
Flanger50	[N]	
Foot Controller 100,105		
Foot Switch13,15	NUMBER Button	7

NUMBER SHIFT Jack	[U]
Noise Suppressor55,57,65,69,73,76,77	UTILITY Button7
	[v]
OMNI92,95	VALUE Button7,19
OUTPUT JACK L(MONO)/R ······8	VOCAL MULTI
OVERDRIVE/DISTORTION	VOCODER54
Overload Indicator12	VOCODER
[P]	(w)
PARAMETER Button 7,19	WRITE Button 7,20
PITCH SHIFTER45,48	Write Procedure20
PLATE30	
Panning65	
Parameter19	·
Performance Screen ·····II	
Phaser52,61,64	
Pitch Bender Message93	
Pre Delay ·····23	
Preset Data ·····108	
Program Change Map 96,116	
Program Change Message93,96	
Program Number12	
[R]	
REVERBI+REVERB281	
RHODES64	
ROOM28	
ROTARY56	
Range of Program Numbers Selectable With Foot - switch14	
Reverb23	
Reverb Time23	
Reverberation23	
Rotary56	
[s]	
SPACE CHORUS ······43	•
ST. PITCH SHIFTER48	
STEREO DELAY41	
STEREO ENHANCER75	
STEREO FLANGER50	
STEREO PHASER52	
STEREO REVERB35	
Space Chorus	
Super Chorus ······55	
System Data·····108	
-	

Index to the Unit's Functions

Use the following as a quick guide to explanations about things you would like to do with the unit.

(Connections)	Connect with a mixer's Send/Return					
	Connect with a keyboard					
	Connect with a guitar					
	Set the Level Switch10,11,12					
⟨Before Outputting Ar	ny Sound)					
	Turn on the power11					
	Adjust the Input Level					
(Program Numbers)	Select an Effects Program (Effects Number) from the panel					
	Select an Effects Program (Effects Number) using a foot - switch					
	Select an Effects Program (Effects Number) while in the process					
	of making settings for an Effects Program					
	Set the range for changes in Program Number using a foot - switch					
(Effects On/Off)	Turn Effects On/Off from the panel					
	Turn Effects On/Off with a foot - switch					
	Set the mode for switching Effects On/Off15					
•	Set the unit so no sound is output when Effects are Off (Even Direct sound not output)					
(Effects Programs)	Revise an existing Effects Program to create a different one					
	Create a completely new Effects Program					
	Copy Effects Programs to other locations (Program Numbers)19					
	Make changes in the parameters for an Effects Program					
	Store an Effects Program in memory when it's completed (Write Procedure)20					
	Change the order in which Effects Programs are stored					
	(Rearrange the order of Program Numbers)21					
	Change the name of an Effects Program21					
(MIDI Settings)	Set the MIDI channel95					
	Set the unit to the OMNI Mode95					
	Remotely change Program Numbers on the SE - 50 using an external MIDI device96					
	Make settings for the Program Change Map96					
	Remotely manipulate parameters in the SE - 50 using an external MIDI device (MIDI Control)98					
	Make settings for MIDI Control98					
	Use a foot controller (FC - 100MK 11)					

⟨ Transmission ∕ l	Reception of Data)					
	Types of data that can be transmitted ···································					
	Connections needed to save SE - 50 data onto a sequencer					
	Connections needed to receive data previously stored in a sequencer					
	Connections needed to copy data to another SE - 50					
	Transmit data (Bulk Dump)102					
	Receive data (Bulk Load)					
(Others)	Restore the Factory Presets108					
	Review the types of data that can be restored to their Factory Presets					

Information

●When you need repair service, call your local Roland Service Station or the authorized Roland distributor in your country as shown below.

U. S. A.

Roland Corp US
7200 Dominion Circle
Los Angeles, CA. 90040 - 3647
U. S. A.

12 (213)685 - 5141

CANADA

Roland Canada Music Ltd. (Head Office) 13880 Mayfield Place Richmond B. C., V6V 2E4 CANADA

5 (604)270 - 6626

Roland Canada Music Ltd.
9425 Transcanadienne
Service Rd. N.,
St Laurent, Quebec H4S 1V3
CANADA
25 (514)335 - 2009

Roland Canada Music Ltd.
346 Watline Avenue.
Mississauga, Ontario L4Z 1X2
CANADA

(2) (416)890 - 6488

AUSTRALIA

Roland Corporation (Australia)Pty. Ltd. (Head Office) 38 Campbell Avenue Dee Why West. NSW 2099 AUSTRALIA 22 (02)982 - 8266

Roland Corporation (Australia)Pty. Ltd. (Melbourne Office) 50 Garden Street South Yarra, Victoria 3141 AUSTRALIA 22 (03)241 - 1254

NEW ZEALAND

Roland Corporation (NZ)Ltd. 97 Mt. Eden Road, Mt. Eden. Auckland 3 NEW ZEALAND \$\tilde{C}\$ (09)398 - 715

UNITED KINGDOM

Roland(UK)Ltd
Amalgamated Drive
West Cross Centre, Brentford,
Middlesex TW8 9EZ,
UNITED KINGDOM
25 (81)568 - 4578

WEST GERMANY

Roland Elektronische
Musikinstrumente
Handelsgesellschaft mbH.
Oststrasse 96,
2000 Norderstedt
WEST GERMANY
70 040/52 60 090

BELGIUM/HOLLAND/ LUXEMBOURG

Roland Benelux N. V. Houtstraat 1 B - 2431 Oevel - Westerio BELGIUM 27 014 - 58 45 35

DENMARK

Roland Scandinavia A/S
Langebrogade 6
Box 1937
DK - 1023 Copenhagen K.
DENMARK

\$\pi 31 - 95 31 11

SWEDEN

Roland Scandinavia A/S
DanvikCenter 28 A. 2 tr.
S - 131 30 Nacka,
SWEDEN
25 08 - 702 00 20

NORWAY

Roland Scandinavia
Avd. Norge
Lilleakerveien 2
Postboks 95 Lilleaker
N - 0216 Oslo 2
NORWAY
TS 02 - 73 00 74

FINLAND

Fazer Musik Inc. Länsituulentie POB 169 SF - 02101 Espoo FINLAND TO - 43 50 11

ITALY

Roland Italy S. P. A.
Viale delle Industrie 8.
20020 ARESE MILANO
ITALY
202 - 93581311

SPAIN

Roland Electronics de España S. A. Bolivia 239 08020 Barcelona SPAIN 293 - 308 - 1000

SWITZERLAND

Musitronic AG
Gerberstrasse 5, CH - 4410
Liestal
SWITZERLAND
☎061/921 16 15

Roland CK (Switzerland) AG
Hauptstrasse 21
CH - 4456 Tenniken
SWITZERLAND
2061/98 60 55
Repair Service by Musitronic AG

FRANCE

Musikengro 102, Avenue Jean - Jaures 69007 Lyon Cedex 07 FRANCE ☎ (7)858 - 54 60

Musikengro (Paris Office) Centre Region Parisienne 41 rue Charles - Fourier, 94400 Vitry s/Seine FRANCE 22 (1)4680 86 62

AUSTRIA

E. Demaite &Co.
Neu - Rum Siemens - Strasse 4
A - 6021 Innsbruck Box 591
AUSTRIA
T 43(05222)63 451

GREECE

V. Dimitriadis & Co. Ltd. 2 Fidiou Str., GR 106 78 Athens GREECE 23 36 20 1 30

PORTUGAL

Casa Caius Instrumentos Musicais Lda. Rua de Santa Catarina 131 Porto PORTUGAL 202 - 38 44 56

HUNGARY

Intermusica Ltd.
Warehouse Area 'DEPO'
Budapest, P.O. Box 3,
2045 Torokbalint
Budapest
HUNGARY
25 1868905

BRAZIL

Oliver do Brazil S.A.
Instrumentos Musicais
Av. Cecl. No.578
Centro Empresarial
Tambore - Barueri - SP.
CEP - 06400
BRAZIL.

25 (011)709 - 1267

			•	
•				
	•			

Roland®

10990

UPC

10990



18961

